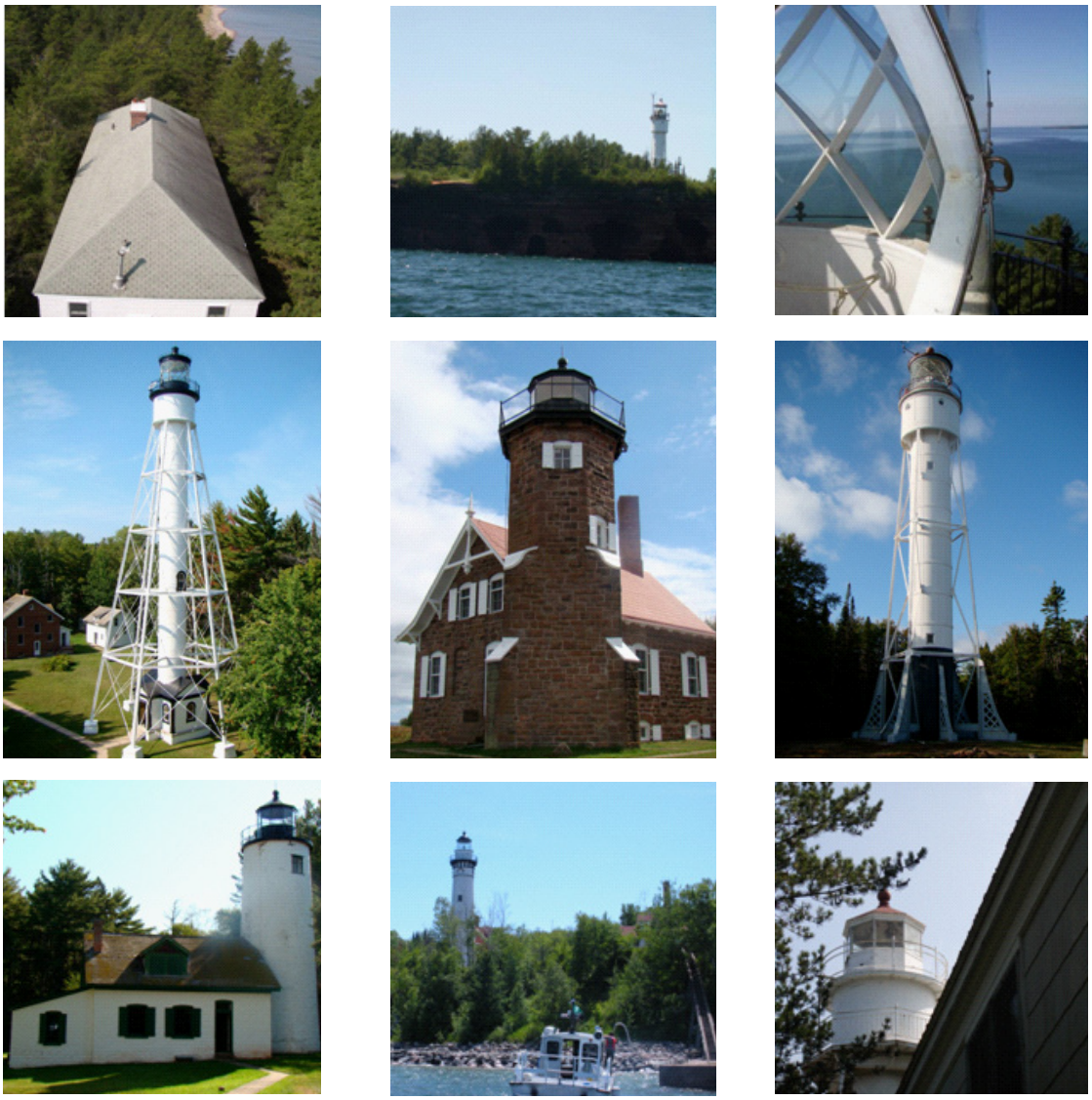


Summary Document

For

Apostle Islands National Lakeshore
Cultural Landscape Report and Historic Structure Report

November 2011

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PURPOSE OF THE SUMMARY DOCUMENT

The purpose of the summary document of the Cultural Landscape Report/Historic Structure Report (CLR/HSR) for five islands of Apostle Islands National Lakeshore is to provide a condensed version for staff reference. The full CLR/HSR document contains six volumes – each a separate three-ring binder (the table of contents for the six volumes is included for reference in Appendix C). Consult the full document for detailed information.

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EXECUTIVE SUMMARY OF CLR/HSR

In order to develop a comprehensive planning tool, the National Park Service (NPS or Park Service) requested the creation of a Cultural Landscape Report (CLR) and a Historic Structure Report (HSR) for five light stations at Apostle Islands National Lakeshore (park). The two reports were combined into one document as outlined in "Volume I, Chapter 2: Methodology" of the CLR/HSR. Due to the breadth of information and multiple volumes, the Park Service requested a Summary Document of the CLR/HSR for ease of use. Please refer to the entire CLR/HSR document for specific information.

The intent of the combined CLR/HSR is to guide treatment and use of the aboveground cultural resources associated with five light stations on Michigan, Outer, Devils, Long, and Sand islands. Documentation of historic significance and evaluation of integrity of the cultural landscapes provided the framework upon which treatment recommendations were based. An investigation and evaluation of the cultural landscape and historic structures was conducted using NPS and National Register of Historic Places (NRHP) guidelines and forms the body of the CLR/HSR. The CLR/HSR provides park managers with a comprehensive understanding of the physical evolution of the cultural landscape and guidance for the management of the cultural resources.

Apostle Islands National Lakeshore was established by Congress in 1970 and is "dedicated to the preservation and public enjoyment of significant historic, scenic, natural and recreational resources."[1] Located in Bayfield County, Wisconsin, the park consists of 21 islands and a 12-mile-long segment of the Wisconsin mainland. Within its boundaries are 69,372 acres, of which 27,323 acres are submerged lands in Lake Superior. The islands range in size from 3-acre Gull Island to 10,054-acre Stockton Island. In December 2004, 80% of the park's land area was congressionally designated as the "Gaylord Nelson Wilderness" area.

The single largest collection of NRHP lighthouses and lighthouse complexes in the National Park System is located within the park. The park attracted nearly 170,000 visitors in 2009. The primary reasons for visiting include camping, boating, sea kayaking, fishing, and visiting the lighthouses. The Park Service faces many challenges associated with the long-term management and maintenance of the light stations, including maintenance of cultural landscapes and historic structures. Today, due to encroaching vegetation, the landscapes of the light stations differ from those of the period of significance (1856 to 1978). Since establishing the park, NPS management practices have allowed natural reforestation in many areas. Areas that were once cleared as part of light station operations are now forested as a result of natural regeneration. These areas now provide wildlife habitat and, in a few cases, uncommon plant communities; however, these plant communities compromise the integrity of the cultural landscapes.

The light station structures are in varying need of repair to mitigate the conditions and deterioration that threaten their longevity. Remediation of hazardous materials is also an issue, as is improving visitor access to the light stations and structures. If an informed comprehensive plan for cultural landscape and historic structure treatments is not developed and implemented, the growing list of deferred maintenance may compromise the historic integrity of the resources over time, diminish the resources' interpretive value, and deflate the visitor experience. There could also be damaging effects on natural resources and habitat if future rehabilitation efforts are implemented gradually without adequately considering cumulative environmental consequences. Similarly, the cultural landscape, if approached, could be compromised.

The CLR/HSR will be used in support of the park's General Management Plan, Comprehensive Long-range Interpretive Plan, and associated compliance as required by the National Historic Preservation Act of 1966, as amended, and by the National Environmental Policy Act of 1969, as amended. It will also be used to guide any additional landscape and structural treatments beyond the initial treatments discussed in the CLR/HSR. Used in concert, the document will guide future management of the park's resources.

[1] Apostle Islands National Lakeshore website: www.nps.gov/apis/planyourvisit/things2know.htm.

SUMMARY OF RESEARCH

As outlined in "Volume I, Chapter 2: Methodology" of the CLR/HSR, all readily available park documentation was reviewed and a series of field investigations were conducted in the summer and fall of 2009. The analyzed sources include historic drawings; historic photographs; and log books from the lighthouse keepers, the United States Coast Guard, and NPS volunteers.

SUMMARY OF MAJOR RESEARCH FINDINGS

The light stations were built between 1856 and 1938. Their development coincided with the technological light station advances of the times. Research and field observations resulted in the following findings:

- The change from manned light stations to automated light stations reduced the level of care and maintenance of the landscapes and structures.
- Technological advances affected both the operations and light station facilities, particularly in terms of the ancillary/utilitarian structures (e.g., fog signal, oil, and power buildings).
- The Coast Guard occupation of the light stations altered the historic fabric of the structures and landscapes.
- The NPS era brought a heightened appreciation for historic preservation.
- The extent of natural reforestation in the formerly cleared areas of the light stations has been significant.
- Materials sampling indicates a fair number of "hard" (cement-rich) mortars have been used for past repointing efforts. When used with softer masonry, this can accelerate deterioration.
- Proper ventilation within the towers and other historic structures is critical for long-term maintenance.

SUMMARY OF MANAGEMENT ISSUES

The following management issues were identified by the team (refer to "Volume I, Chapter 5: Management Issues" in the CLR/HSR for further explanation):

- Maintenance of Historic Resources
- Accessibility (ABAAS)
- Life Safety/Code Compliance (guardrails, handrails, and exit paths)
- Hazardous Materials
- Interpretation and Park Signage
- Boat Docks and Landings
- Wilderness and Reservation Boundaries
- Clearing Practices
- Shoreline Slope Stabilization
- Sustainability
- Evolving Projects/Changing Objectives
- Construction Logistics

SUMMARY OF RECOMMENDED TREATMENTS

The overarching treatment strategy for the light stations is rehabilitation, recognizing that within this approach, individual features or structures may warrant preservation (typically stabilization) or restoration. Likewise, assuming that treatments would be undertaken in phases, stabilization may become the first step. The CLR/HSR includes the following proposed uses and treatments:

- **Michigan Island: Rehabilitation** – Rehabilitate Old Michigan Island Lighthouse for self-guided visitor use at the quarters and guided tours to the Tower. Rehabilitate the Keepers Quarters for seasonal housing. Rehabilitate the Second Tower for guided tours. Preserve the Assistant Keepers Quarters and Workshop, Power House, Shed, and Privy primarily for NPS maintenance, with the

possibility of providing visitors visual access to the Shed and Privy. Rehabilitate the cultural landscape including selective clearing of trees, stabilizing the slope embankment, upgrading site accessibility, repairing the tram to a working condition, removing invasive vegetation, confining historic vegetation that might be invasive, and restoring historic plantings.

- **Outer Island: Rehabilitation** – Rehabilitate the Tower for guided visitor use. Rehabilitate the Keepers Quarters for staff shelter. Rehabilitate the Fog Signal Building for possible visitor use. Preserve the Oil Storage and Privy for NPS storage. Rehabilitate the cultural landscape including clearing trees, stabilizing the slope embankment, maintaining recent site drainage improvements, repairing the tram to working order, removing noncontributing features, and maintaining small scale contributing features.
- **Devils Island: Rehabilitation** – Rehabilitate the Tower, Keepers Quarters, Assistant Keepers Quarters, Oil House #2, and Fog Signal Building (remove noncontributing south addition) for varied levels of visitor use. Preserve Oil House #1, Tramway Engine Building, and Boathouse for NPS storage. Rehabilitate the cultural landscape including clearing trees, repairing tram tracks, maintaining lawn areas, and retaining contributing small scale features.
- **Long Island: Rehabilitation** – Rehabilitate LaPointe Light Tower for guided visitor tours. Rehabilitate Chequamegon Point Tower (no visitor tours). Preserve the Triplex and Oil Building. Rehabilitate the cultural landscape including investigating the extent of concrete walks, clearing trees, stabilizing ruins, maintaining the existing dock, and retaining contributing small scale features.
- **Sand Island: Restoration** – Restore the Light Station Tower and Quarters to pre-1921 conditions for visitor tours and possible overflow shelter for staff. Make the kitchen physically accessible and add interpretive program access for the remainder of the Light Station Tower and Quarters. Preserve the Oil Building and Privy for possible visitor visual access. Restore and rehabilitate the cultural landscape including clearing trees, upgrading site accessibility, restoring missing fencing, and relocating and removing noncompatible small scale features.

NEXT STEPS

1. Implement the revised Preferred Alternative of the second Value Analysis held in December 2010 for realization of pending construction projects.
2. Continue to seek funding to implement the remaining treatment recommendations identified in the CLR/HSR.
3. Seek enhanced maintenance funding to protect the resources after implementation of the CLR/HSR treatment recommendations.
4. Initiate a National Historic Landmark nomination.

PROJECT CHRONOLOGY

General Management Plan (Draft) Issued	2009
PMIS Updated	April 2009
Initial Design Team Scoping Trip	July 2009
CLR/HSR/Environmental Assessment (EA) Initiated	August 2009
Design Team Field Work	September 2009
Draft CLR/HSR 50% ,	January 2010
VA/Choosing by Advantage (CBA) #1 (Select Preferred Alternative of the CLR/HSR/EA)	May 2010
NPS Staff Level ABAAS Site Visit	June 2010
Draft CLR/HSR 75%	August 2010
Emergency Repairs to Devils Lantern and Lens	September–October 2010
Draft CLR/HSR 90%	November 2010
VA/CBA #2 (Refine Preferred Alternative Scope to Within Available Construction Funding)	December 2010
Draft CLR/HSR 100%	March 2011
Predesign/Schematic Design Initiated	March 2011
EA Public Review Period	March–April 2011
Draft PD Report Issued	April 2011
SD Workshop	April 19–20, 2011
General Management Plan (Final) Issued	May 2011
Final PD Report Issued	May 12, 2011
Draft SD Report Issued	May 12, 2011
Accessibility Transition Plan Site Visit	May 23–27, 2011
ABAAS Transition Plan Assessment	May–July 2011
Finalize Finding of No Significant Impact of EA	June 27, 2011
Final CLR/HSR	July 2011
SD DAB Submittal	July 2011

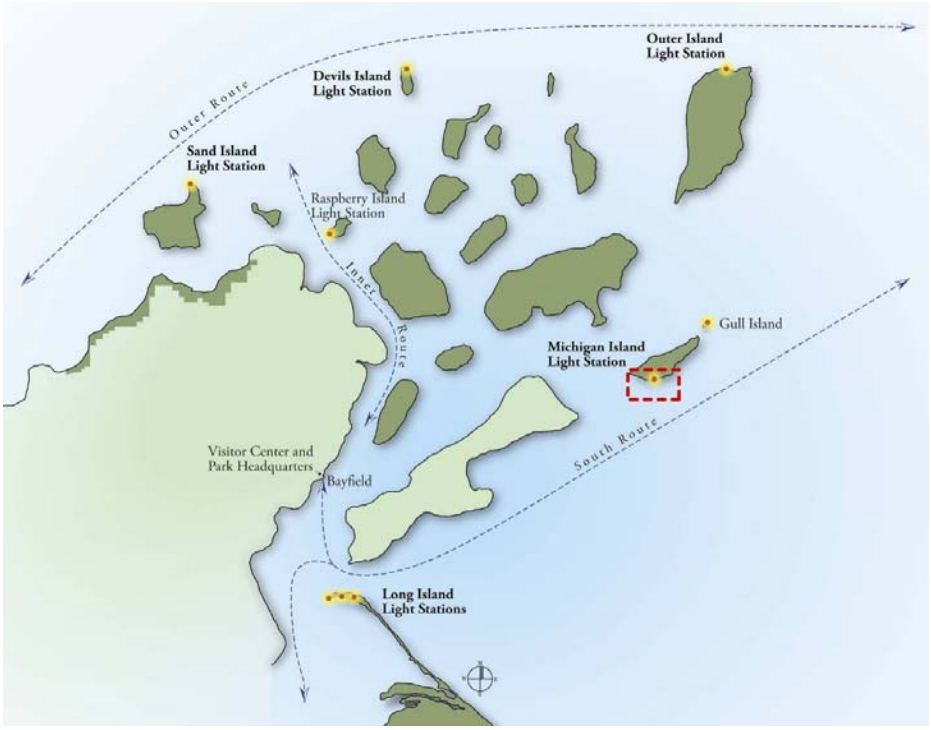
MICHIGAN ISLAND SUMMARY

STUDY AREA

Michigan Island is one of seven islands within the park that provide navigational aid for ships on Lake Superior, which include the six light stations and Gull Island. The study area encompasses the Michigan Island Light Station Reservation and Gull Tower on Gull Island. Michigan Island is 3.5 miles long, 1.1 miles wide, and 1,578 acres. The island is at the eastern edge of the park, approximately 16 miles from Bayfield, Wisconsin and 26 miles from Little Sand Bay. The Michigan Island Light Station Reservation is on the southern shore of the island and occupies 152 acres. The remainder of the island, outside the light station reservation, is part of the Gaylord Nelson Wilderness area, designated in 2004. Gull Island is approximately 3,000 feet northeast of Michigan Island and contains the Gull Island Light Tower.

The Michigan Island Second Tower and Gull Island Tower are the first navigational aids encountered on the southern route when traveling southwest toward Bayfield. The light station is on a bluff above Lake Superior and is surrounded by maturing second-growth northern hardwood forest. The grounds consist of historic clearings, buildings, structures, features, and vegetation.

Today, the island is part of the Apostle Islands National Lakeshore under the jurisdiction of the National Park Service (NPS). The light station and Gull Island Tower continue to serve as navigational aids with the automated lights operated and maintained by the United States Coast Guard (USCG). The NPS maintains the site and buildings, and the light station is frequented by visitors and park staff for its cultural and natural resources.



Michigan Island Light Station Context (Source: MBD 2010)

SIGNIFICANCE OF MICHIGAN ISLAND LIGHT STATION

Michigan Island Light Station is the first light station developed in the archipelago (1856). The period of significance is from 1856 to 1943, beginning with the initial development of the light station and continuing until automation of the Second Tower. The entire 152 acres of the Michigan Island Light Station Reservation comprises its cultural landscape. The majority of the contributing features occur on a core area of 1.5 acres associated with the light station grounds.

Seven contributing buildings on the List of Classified Structures (LCS) include the Old Michigan Island Lighthouse, Second Tower, Keepers Quarters, Assistant Keepers Quarters and Workshop, Power House, Shed, and Privy. Contributing features include the historic clearing, vegetation, organization of buildings and structures, tramway, tram tracks, concrete walks, small scale features, and the bluff.

With many of its original features intact and in good condition, the Michigan Island Light Station clearly portrays the history of the light station as a navigational aid. It continues to convey the development of navigational technology, the story of the people who resided at the light station, and its management.

TREATMENT RECOMMENDATIONS SUMMARY

The treatment recommendations for the Michigan Island Light Station are focused on revealing the role the light station has in the navigational history of the Apostle Islands, and in conveying the historical significance of the light station's cultural landscape and structures. The treatment recommendations are addressed in detail in the CLR/HSR.

Rehabilitation has been identified as the general treatment approach for the Michigan Island Light Station, as it is a holistic approach that addresses the island's extant cultural resources and the relationships between those resources. This approach protects those characteristics and features that convey the island's full historical and cultural significance, while allowing for repairs, alterations, and additions necessary for the compatible use of the island.[2]

Rehabilitation also allows for noncontributing, compatible features to remain, and for the removal or relocation of noncontributing, noncompatible features. While the overall treatment intent of the cultural landscape is one of rehabilitation, many individual treatment recommendations focus on preservation of existing features. Treatment recommendations include the following:[3]

1) Reestablish a portion of the historic cleared area of the light station;
2) Reestablish views from Lake Superior to the light station;
3) Repair circulation features, including the tramway, tram tracks, and concrete walks;
4) Retain the boat dock location;
5) Reestablish missing landscape plantings;
6) Remove noncompatible features;
7) Rehabilitate the Old Michigan Island Lighthouse, Michigan Island Second Tower, Keepers Quarters, and Privy; and
8) Preserve the Assistant Keepers Quarters and Workshop, Power House, and Shed.

The treatment recommendations are comprehensive and are intended to address all aspects of the cultural landscape and historic structures. To achieve full implementation of these recommendations, a phased approach for construction activities would be required. Initial actions may include basic preservation measures

[2] Page et al. 1998.
[3] A glossary of terms used to describe treatment recommendations is included in the "Glossary of Terms" at the end of each islands' volume.

to protect and stabilize contributing features, followed by more detailed repair measures as park resources allow.

In addition to recommendations for physical improvements, actions are proposed to improve visitor access, improve efficiency of park operations and maintenance activities, and improve protection of the light station's natural systems.

The following graphic and matrix provide an overview of primary treatment recommendations for the Michigan Island Light Station. For further explanation of the treatment recommendations and graphic representations refer to Volume II of VI: Michigan Island CLR/HSR which includes reservation and landscape features plans; a description of clearing/revegetation practices; a discussion on ABAAS compliance within the light station grounds; and detailed treatments for individual landscape features.

1 PHOTOGRAPHS



Old Michigan Island Lighthouse



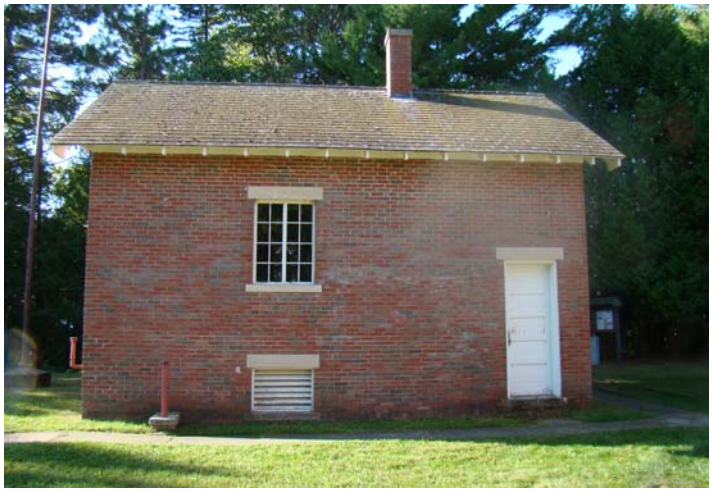
Second Tower



Keepers Quarters



Assistant Keepers Quarters & Workshop



Power House



Shed



Privy

Michigan Island Preferred Treatment Alternative

New Accessible NPS Restroom with Outdoor Accessible Route - Location to be Determined

Relocated Solar Panel

Preserve Assistant Keepers Quarters/ Workshop

Retain Trail For Accessibility

Maintain Drainage System

Remove Tree

Rehabilitate Keepers Quarters

Retain Fuel Tanks

Remove and Replant Cedar Hedge

Restore Missing Features of Keepers Quarters Landscape

Preserve Power House

Maintain Flagpole

Repair Tramway to Working Condition

Repair Tramway Railing (West Side)

Selectively Clear Trees on Slope to Reestablish View to Light Station

Retain Boat Dock in Current Location

Assistant Keepers Quarters/ Workshop

Keepers Quarters

Power House

Light Tower

Rehabilitate Light Tower

Maintain Concrete Walks Replace Broken Sections

Reset Radio Antenna by resetting Pole and Base

Retain Concrete Foundation

Repair Tram Tracks to Working Condition

Maintain Trees

Shed

Privy

Stabilize Root Cellar

Area of Further Investigation Gardens/Plantings

Preserve Shed

Relocate Solar Panel to West

Rehabilitate Privy

Repair Missing Track

Reestablish Cleared Area by Removal of Forest Vegetation, Maintain as Meadow Clearing

Stabilize Cistern

Old Michigan Island Lighthouse

Rehabilitate Old Michigan Island Lighthouse

Maintain Concrete Collar of Original Flagpole

Plant Trees to Reestablish Orchard Pattern

Accessible Ramp to Old Michigan Island LH

Remove Fire Pit

Maintain Radio Antenna Pole and Base

Retain Tram Turntable

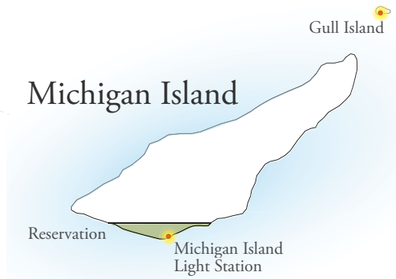
Reestablish Missing Features of Old Michigan Island Lighthouse Landscape

Selectively Clear Trees on Slope to Reestablish View to Light Station

Monitor and Stabilize Slope as Needed

Beach

Reestablish Historic View of Light Station



Legend

- Lawn Clearing
- Meadow Clearing
- Slope Stabilization
- Forest
- Existing Edge of Forest
- Landscape Plantings - (Shrubs, Perennials, Annuals)

Note: Features in *italics* are Noncontributing

See Site Image MI-87 for Landscape Feature Treatments

N W E S

0 30 60

SITE IMAGE MI-86

UNITED STATES
DEPARTMENT OF THE INTERIOR
APOSTLE ISLANDS NATIONAL LAKESHORE

JUNE 2011

TITLE OF PROJECT
HISTORIC STRUCTURE REPORT, CULTURAL LANDSCAPE REPORT & ENVIRONMENTAL ASSESSMENT TREATMENT ALTERNATIVES

TITLE OF DRAWING
MICHIGAN ISLAND LIGHT STATION

NAME OF PARK
APOSTLE ISLANDS NATIONAL LAKESHORE

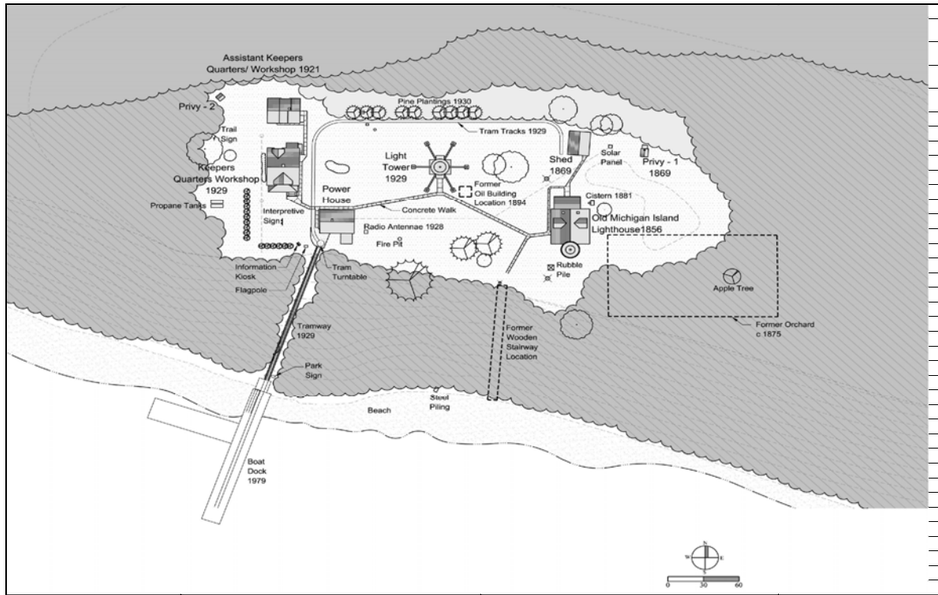
REGION	COUNTY	STATE
MIDWEST	ASHLAND	WISCONSIN

MICHIGAN ISLAND

PREFERRED ALTERNATIVE: REHABILITATION A – DUAL PERIOD

A NAVIGATIONAL CONTINUUM

REVISED 07.12.2011



General Description:
This treatment alternative proposes rehabilitating each island's cultural landscape to best portray the continuum of navigational history that characterizes the Apostle Islands as a system of light stations. Each island (and each light station) conveys specific characteristics related to particular periods of development in the navigation of the archipelago. This treatment will reveal this continuum by restoring missing historic features, and by repairing or altering others to convey the full historical significance of the system. Additions that are necessary to enable the compatible use of the light stations or islands are allowed as long as portions or features that convey the historical, cultural, or architectural values are preserved.

Period of Significance: 1856 - 1943

Please refer to the proposed treatments below.

Existing Conditions Site Plan - for reference only

	Old Michigan Island Lighthouse	Second Tower	Keepers Quarters	Assistant Keepers Quarters & Workshop	Power House	Shed	Privy
Proposed Use of Building	Rehabilitate and allow for self-guided visitor use at Quarters; guided at Tower.	Rehabilitate for guided visitor use.	Rehabilitate and use as seasonal NPS housing.	Preserve and maintain current use as NPS storage.	Preserve and maintain current use as NPS storage and systems use.	Preserve for storage for NPS use; possible plexi panel at door to allow visitor visual access.	Rehabilitate; plexi panel at door to allow visitor visual access.
Architecture	Reroof; add gutter/downspout system; increase basement and tower ventilation; repair rust at walk and lantern walls, repaint; seal joints; replace wood wall shingles at dormers; repair windows and repaint; repair all doors and hardware and repaint; paint exterior trim on doors and window; repair masonry walls and repaint; repair damaged plaster at walls and ceilings and paint interior complete; refinish wood floors; add handrails to stairs; repair and paint casework. Add a security gate at the base of tower that allows for air movement.	Increase ventilation; investigate replacing one lower sash on a north window(s) for a secure louver; replace missing brass intake caps and verify operation of all others; repair interior plaster/paint damage; repair wood frame at door and paint; verify/provide sealant at all exterior joints.	Reroof; repair gutters and downspouts; repaint trim on windows and doors; repair NE stair landing; repair windows and doors; replace missing hardware; repair cracks at plaster and repaint walls and ceilings; refinish trim and wood floor with alligatored finish coat; repair and paint the casework;	Reroof; repair gutters; repaint siding and trim; repair windows and doors	Reroof; add gutters; repair chimney; repair windows and doors; repaint exterior of windows, doors, and trim	Reroof; foundation repair; repaint siding and trim; repair windows and doors and repaint; install plexi panel system (operable) to allow visitor to see in but closeable to maintain security and weather tight closure	Restore roof shingles; repair foundation; repaint windows, doors, siding, and trim; install plexi panel system (operable) to allow visitor to see in but closeable to maintain security and weather tight closure
Structural	Improve basement ventilation or reduce humidity in basement to reduce the moisture content of the first floor framing, properly frame first floor joists at windows and stair. Investigate center beam at first floor framing and kitchen floor framing.	Investigate cracked column bases to determine the structural significance of the cracks, repair or monitor cracks	Properly frame first floor joists at windows, replace concrete stair landing, repair masonry walls at rear stair, investigate load capacity of roof framing and strengthen if necessary	Repair damaged area of roof	Repair masonry walls below concrete roof slab, protect concrete roof slab from continued deterioration	Construct a concrete foundation, repair and strengthen first floor joists or replace with concrete slab-on-grade, strengthen or reframe walls, strengthen or reframe roof	Repair walls of concrete vault, reset or replace both spot footings
Mechanical	Increase ventilation for moisture control. Curate plumbing fixtures and remove piping. Retain boiler, boiler piping, and radiators; repaint.	Increase ventilation for moisture control and visitor comfort.	Clean, inspect, and test sewer/septic system. Repairs as needed for operational system. Increase basement ventilation for moisture control. Replace rusted propane piping. Install a chimney liner. Remove propane piping to refrigerator and stove.	Cap and seal unused plumbing piping. Increase ventilation for moisture control.	Replace tram hoist. Increase basement ventilation for moisture control.	No action at this time.	No action at this time.
Electrical	Provide additional PV power to facilitate running of new ventilation equipment. Remove existing lightning protection system and, after re-roofing, replace with new system. Remove lighting fixtures, receptacles and junction boxes.	Provide additional PV power to facilitate running of new ventilation equipment. Engage an LPI (Lightning Protection Institute) certified inspector to perform an inspection of the lightning protection system and provide findings and recommendations in accordance with LPI-175.	Remove existing lightning protection system and, after re-roofing, replace with new system. Provide additional PV power to building to accommodate new ventilation equipment. Provide smoke/CO2 detectors as required.	Provide additional PV power to facilitate running of new ventilation equipment as needed. Replace existing underground power feed and upgrade building wiring to accommodate new ventilation equipment as needed. Provide smoke/CO2 detectors as required.	Replace existing tram hoist with new as required. Provide site power distribution for other rehabilitated buildings as required.	No action at this time.	No action at this time.
HazMat	Bat guano abatement; water intrusion/mold mitigation; soil characterization (lead); asbestos sampling of materials to be rehabilitated; remove/stabilize lead paint; remove and replace asbestos roofing.	Soil characterization (lead).	Water intrusion/mold mitigation; soil characterization (lead); asbestos sampling of materials to be rehabilitated; remove/stabilize lead paint; remove and replace asbestos roofing.	Water intrusion/mold mitigation; remove/stabilize lead paint; remove and replace asbestos roofing.	Asbestos sampling of materials to be rehabilitated; remove/stabilize lead paint; remove and replace asbestos roofing.	Remove/stabilize lead paint.	Remove/stabilize lead paint.
Accessibility	Add a freestanding ramp at the west entry door and increase the door opening width as well as openings within the first floor. Accessibility by mechanical means to the 2nd floor and Tower is not included at this time.	Program access through interpretive wayside exhibits.	Program access through interpretive wayside exhibits.	Program access through interpretive wayside exhibits.	Program access through interpretive wayside exhibits.	Program access through interpretive wayside exhibits.	Program access through interpretive wayside exhibits.

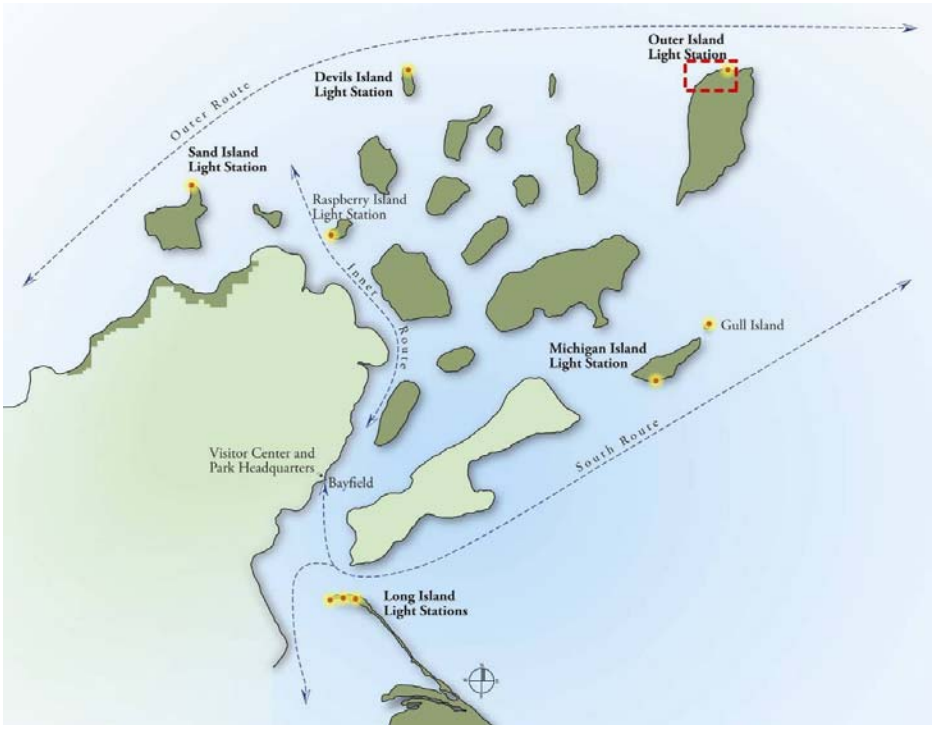
OUTER ISLAND SUMMARY

STUDY AREA

The study area encompasses the Outer Island light station reservation and the light station grounds. Outer Island is 7.0 miles long, 2.8 miles wide, and approximately 7,999 acres in size. The island is located on the furthest northeastern edge of the park, approximately 27 miles from Bayfield, Wisconsin and 28 miles from Little Sand Bay. The Outer Island Light Station Reservation is located on the northern end of the island and occupies approximately 200 acres. The remainder of the island outside the light station reservation is part of the Gaylord Nelson Wilderness area, designated in 2004.

Outer Island is the first navigational aid encountered when traveling west from eastern Lake Superior. The light station is on a bluff above Lake Superior and is surrounded by maturing second-growth and old-growth northern hardwood forest.

Today, the island is part of the Apostle Islands National Lakeshore under the jurisdiction of the National Park Service (NPS). The light station continues to serve as a navigational aid; the automated light is operated and maintained by the Coast Guard. The Park Service maintains the site and buildings, and the light station grounds are frequented by visitors and park staff for the station's cultural and natural resources.



Outer Island Light Station Context (Source: MBD 2010)

SIGNIFICANCE OF OUTER ISLAND LIGHT STATION

Outer Island is the furthest northeast of all the light stations in the Apostle Islands, signaling either the beginning or terminus of the outer shipping route to passing ships on Lake Superior. In 1874, the Outer Island Light Station housed the first fog signal of its kind in the Apostle Islands. The period of significance is from 1874 to 1961, beginning with the initial development of the light station and continuing until automation of the Outer Island Tower. The island plays an important role in depicting the history of the light stations and navigational aid technology in the Apostle Islands because of its remote location and architecture. The entire 200 acres of the Outer Island Light Station Reservation comprises its cultural landscape. However, the majority of its contributing features occur in a core area of 1.5 acres associated with the light station grounds at the northern end of the island.

Five contributing buildings on the LCS include the Outer Island Tower and Keepers Quarters, Fog Signal Building, Oil Storage, and Privy. Contributing features include the historic clearing, vegetation, organization of buildings and structures, boat dock, tramway, tram tracks, concrete walks, small scale features, and the bluff.

With many of its original features intact and in good condition, the Outer Island Light Station Reservation clearly portrays the history of the light station as a navigational aid. It continues to convey the development of navigational technology, the story of the people who resided at the light station, and its management.

TREATMENT RECOMMENDATIONS SUMMARY

The treatment recommendations for the Outer Island Light Station are focused on revealing the role the light station has in the navigational history of the Apostle Islands, and in conveying the historical significance of the light station's cultural landscape and historic structures. The treatment recommendations are addressed in detail in the CLR/HSR.

Rehabilitation has been identified as the general treatment approach for the Outer Island Light Station, as it is a holistic approach that addresses the island's extant cultural resources and the relationships between those resources. This approach protects those characteristics and features that convey the island's full historical and cultural significance, while allowing for repairs, alterations, and additions necessary for the compatible use of the island.[4]

Rehabilitation also allows for noncontributing, compatible features to remain, and for the removal or relocation of noncontributing, noncompatible features. While the overall treatment intent of the cultural landscape is one of rehabilitation, many individual treatment recommendations focus on preservation of existing features. Treatment recommendations include the following:[5]

1) Reestablish portions of the historic cleared area of the light station;
2) Reestablish views from Lake Superior to the light station;
3) Repair and maintain circulation features, including the tramway, tram tracks, and concrete walks;
4) Retain the historic location and configuration of the boat dock;
5) Maintain extant landscape plantings;
6) Remove noncompatible features;
7) Rehabilitate the Outer Island Tower, Keepers Quarters, and Fog Signal Building; and
8) Preserve the Oil Storage and Privy.

The treatment recommendations are comprehensive and are intended to address all aspects of the cultural landscape and historic structures. To achieve full implementation of these recommendations, a phased

[4] Page et al. 1998.
[5] A glossary of terms used to describe treatment recommendations is included in the "Glossary of Terms" at the end of each islands' volume.

approach for construction activities would be required. Initial actions may include basic preservation measures to protect and stabilize contributing features, followed by more detailed repair measures as park resources allow.

In addition to recommendations for physical improvements, actions are proposed to improve efficiency of park operations and maintenance activities, and improve protection of the light station's natural systems.

The following graphic and matrix provide an overview of primary treatment recommendations for the Outer Island Light Station. For further explanation of the treatment recommendations and graphic representations refer to Volume III of VI: Outer Island CLR/HSR which includes a reservation plan; a description of clearing/revegetation practices; a discussion on ABAAS compliance within the light station grounds; and detailed treatments for individual landscape features.

1 PHOTOGRAPHS



Outer Island Light Tower



Keepers Quarters and Light Tower Base



Tower and Keepers Quarters



Fog Signal Building



Oil Storage



Privy

Outer Island Preferred Treatment Alternative



Outer Island

Legend

- Lawn Clearing
- Forest
- Slope Stabilization
- Existing Edge of Forest
- Meadow Clearing
- Edge of Historic Cleared Area

Note: Features in *italics* are Noncontributing

Reestablish Historic View of Light Station

Retain Dock Functionality in Existing Location and Configuration

Maintain Tram Tracks

Retain Stone Revetment

Remove Propane Tanks

Repair Original Flagpole

Repair Tramway Railing (East)

Repair Tramway to Working Condition

Maintain Tram Tracks

Maintain Lilac

Maintain all Concrete Walks

Selectively Clear Trees on Slope to Reestablish Views to Light Station

Maintain Swale and Drain System

Fog Signal Building

Maintain Concrete Foundation

Light Tower and Keeper's Quarters

Clear Trees and Maintain as Meadow Clearing

Rehabilitate Fog Signal Building

Stabilize Cistern

Maintain Wood Structure

Remove Plantings

Retain Fuel Tank

Maintain Second Flagpole

Relocated Fire Pit

Clear Trees Maintain as Meadow

Oil Storage

Rehabilitate Keepers Quarters and Tower

Retain Solar Panel and Battery Unit

Preserve Oil Storage

Maintain Landscape Plantings East of Oil Storage

Maintain Lawn Clearing

Mark Location of Nonextant Well

Remove Wood Posts and Concrete Footing

Relocate Firepit to Northwest

Repair Ladder Stand

Retain Conc Marker

Preserve Privy

Privy

Stabilize Remnant Cabin (remove vegetation)

Remove Horseshoe Pegs

Edge of Historic Cleared Area

New Accesible NPS Restroom - Location to be Determined

N W E S

0 30 60

SITE IMAGE OI-82

UNITED STATES
DEPARTMENT OF THE INTERIOR

APOSTLE ISLANDS NATIONAL LAKESHORE

JUNE 2011

TITLE OF PROJECT
HISTORIC STRUCTURE REPORT, CULTURAL LANDSCAPE REPORT & ENVIRONMENTAL ASSESSMENT
TREATMENT ALTERNATIVES

TITLE OF DRAWING
OUTER ISLAND LIGHT STATION

NAME OF PARK
APOSTLE ISLANDS NATIONAL LAKESHORE

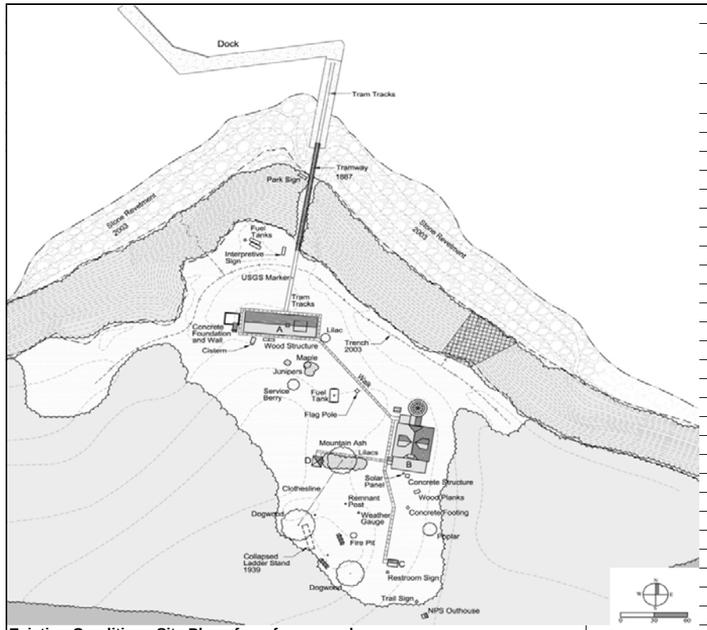
REGION	COUNTY	STATE
MIDWEST	ASHLAND	WISCONSIN

OUTER ISLAND

PREFERRED ALTERNATIVE: REHABILITATION A

A NAVIGATIONAL CONTINUUM

REVISED 07.12.2011



Existing Conditions Site Plan - for reference only

General Description:
This treatment alternative proposes rehabilitating each island's cultural landscape to best portray the continuum of navigational history that characterizes the Apostle Islands as a system of light stations. Each island (and each light station) conveys specific characteristics related to particular periods of development in the navigation of the archipelago. This treatment will reveal this continuum by restoring missing historic features, and by repairing or altering others to convey the full historical significance of the system. Additions that are necessary to enable the compatible use of the light stations or islands are allowed as long as portions or features that convey the historical, cultural, or architectural values are preserved.

Period of Significance: 1874 - 1961

Please refer to the proposed treatments below.

	Tower	Keepers Quarters	Fog Signal Building	Oil Storage	Privy
Proposed Use of Building	Rehabilitate; guided visitor access.	Rehabilitate as shelter for staff (no utilities).	Rehabilitate for limited visitor access to interior; possibly visual only.	Preserve and maintain current use as NPS storage.	Preserve and maintain current use as vacant.
Architecture	Increase tower ventilation; investigate replacing a window sash with a secure louver; repair cracks at masonry; repair rust patches; repaint exterior and interior complete; repaint metal door at base; replace missing access door at walk; replace broken glass and glazing at Lantern; seal all joints	Increase tower: basement ventilation; add gutter and downspout system; reroof the north shed and southwest entry vestibule with materials in kind; repair the rotted siding at the base of the SW entry and paint all siding and exterior trim; repair windows and all doors, repaint; repair masonry walls and chimney; remove non historic ceiling tiles; remove damaged areas of plaster at walls and ceilings, repair in kind and paint; paint all interior trim; repair existing flooring in situ; add handrail at basement stair	Paint fascia, soffit and frieze; repair windows and paint; repair all doors and paint; repair exterior walls and chipped siding; paint interior complete	Repoint masonry at southwest corner; strip paint from brick walls; repaint with permeable coating; repaint door	Replace missing ridge cap pieces, repaint existing metal shingles and soffit/fascia; strip paint from brick walls; repaint with permeable coating; repair window and door and paint
Structural	Monitor existing cracks to verify non-structural	Repoint masonry cracks, repair east framed wall in connection to tower, strengthen roof to properly support dormers	Strengthen ceiling framing over work room	No action at this time	No action at this time
Mechanical	Increase ventilation for moisture control.	Increase ventilation for moisture control. Install chimney liner for heater flue vent. Clean, inspect, and test sewer/septic system. Perform repairs as needed for operational septic system. Remove propane piping to refrigerator and stove.	Replace tram hoist. Clean and repaint fog signal components, piping, and tanks.	No action at this time.	No action at this time.
Electrical	Provide additional PV power to facilitate running of new ventilation equipment. Engage an LPI (Lightning Protection Institute) certified inspector to perform an inspection of the lightning protection system and provide findings and recommendations in accordance with LPI-175.	Remove existing lightning protection system and replace with new system. Rehabilitate and expand existing PV Array and storage battery system to permit charging of staff radio units and accommodate new ventilation.	Replace broken lighting fixtures and rehabilitate wiring systems. Replace existing tram hoist with new as required.	No action at this time.	No action at this time.
HazMat	Soil characterization (lead); asbestos sampling of materials to be preserved/stabilized; remove/stabilize lead paint	Water intrusion mitigation; soil characterization (lead); asbestos sampling of materials to be preserved/stabilized; remove/stabilize lead paint	Asbestos sampling of materials to be preserved/stabilized; abatement of a few pieces of deteriorating asbestos cement siding; remove/stabilize lead paint	Remove/stabilize lead paint	Remove/stabilize lead paint
Accessibility	Program access through interpretive wayside exhibits.	Program access through interpretive wayside exhibits.	Program access through interpretive wayside exhibits.	Program access through interpretive wayside exhibits.	Program access through interpretive wayside exhibits.

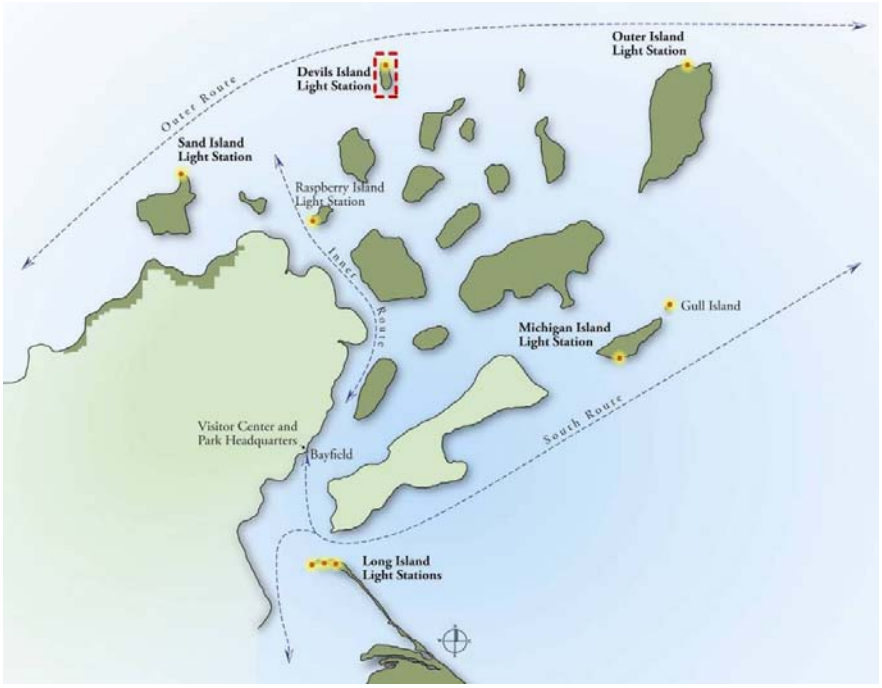
DEVILS ISLAND SUMMARY

STUDY AREA

Devils Island is 1.3 miles long, 0.4 miles wide, and approximately 318 acres in size. The island is located at the northern edge of the park, approximately 21 miles from Bayfield, Wisconsin and 14 miles from Little Sand Bay. The 1894 H. Bamber reservation survey indicates that the entire island was purchased and set aside as the reservation, and notes it as being 320 acres in size. The Devils Island Light Station is located on the north shore of the island occupying approximately 10 acres with a Boathouse and landing area located at the south end of the island. The light station and Boathouse are connected by a trail corridor, formerly a road, established in the earliest years of the light station. The majority of the island, approximately 303 acres, is part of the Gaylord Nelson Wilderness area, designated in 2004.

The Devils Island Light Station is an important navigational aid for the outer shipping route, serving the midpoint between the Sand Island Light Station and the Outer Island Light Station. The light station is at the top of the sandstone cliffs that rise approximately 20 feet above Lake Superior. The light station grounds are surrounded by boreal forest dominated by spruce, fir, cedar, birch, and aspen. The grounds consist of historic buildings and structures, clearings, site features, and vegetation.

Today, the island is part of the Apostle Islands National Lakeshore under the jurisdiction of the National Park Service (NPS). The light station continues to serve as a navigational aid with the automated light tower and other aids maintained by the Coast Guard. The Park Service maintains the sites and buildings, and the light station is frequented by visitors and park staff for its cultural and natural resources.



Devils Island Light Station Context Map (Source: MBD 2010)

SIGNIFICANCE OF DEVILS ISLAND LIGHT STATION

Devils Island is important to the Apostle Islands system because of the extent of its development as an outer route light station, and for its representation of the continuum of navigational aid technology during the period of significance from 1892 to 1978. The Coast Guard remained on the island until automation in 1978, longer than any of the other Apostle Islands light stations. During its peak, the light station contained three separate residential keepers quarters, an extensive tram and loading system, a Boathouse and dock, a pump house, and many other site features that supported operation of the light station. Navigational aid equipment was wide ranging during the period of significance and included the Light Tower, radio beacons, fog signals, and fueling equipment. The entirety of the Devils Island Light Station Reservation comprises its cultural landscape. However, the majority of its contributing features occur on the light station grounds at the northern end of the island and at the Boathouse site at its southern end.

Contributing features include buildings and structures and their organization, historic cleared areas and corridors, circulation features, and the views of the light station from Lake Superior. Eleven structures on the LCS are on the grounds including the Devils Island Light Station Tower, Keepers Quarters, Assistant Keepers Quarters, Fog Signal Building, East Oil Storage Building (Oil House #1), West Oil Storage Building (Oil House #2), Tramway Engine Building, Boathouse, pump house, dock, and the road corridor (cross-island trail).

With many of its original features intact and in good condition, the Devils Island Light Station clearly portrays the history of the light station as a navigational aid. It continues to convey the development of navigational technology, the story of the people who resided at the light station, and its management.

TREATMENT RECOMMENDATIONS SUMMARY

The treatment recommendations for the Devils Island Light Station are focused on revealing the role the light station has in the navigational history of the Apostle Islands, and in conveying the historical significance of the light station's cultural landscape and historic structures. The treatment recommendations are addressed in detail in the CLR/HSR.

Rehabilitation has been identified as the general treatment approach for the Devils Island Light Station, as it is a holistic approach that addresses the island's extant cultural resources and the relationships between those resources. This approach protects those characteristics and features that convey the island's full historical and cultural significance, while allowing for repairs, alterations, and additions necessary for the compatible use of the island.[6]

Rehabilitation also allows for noncontributing, compatible features to remain, and for the removal or relocation of noncontributing, noncompatible features. While the overall treatment intent of the cultural landscape is one of rehabilitation, many individual treatment recommendations focus on preservation of existing features. Treatment recommendations include the following:[7]

1) Reestablish portions of the historic cleared areas of the light station;
2) Reestablish views from Lake Superior to the light station;
3) Preserve circulation features, including the tram tracks and concrete walks;
4) Preserve small scale landscape features and structures;
5) Remove noncompatible features;
6) Rehabilitate the Light Tower, Keepers Quarters, Assistant Keepers Quarters, and Fog Signal Building; and
7) Preserve the Tramway Engine Building, Oil House #1, Oil House #2, and Boathouse.

[6] Page et al. 1998.
[7] A glossary of terms used to describe treatment recommendations is included in the "Glossary of Terms" at the end of each islands' volume.

The treatment recommendations are comprehensive and are intended to address all aspects of the cultural landscape and historic structures. To achieve full implementation of these recommendations, a phased approach for construction activities would be required. Initial actions may include basic preservation measures to protect and stabilize contributing features, followed by more detailed repair measures as park resources allow.

In addition to recommendations for physical improvements, actions are proposed to improve visitor access, improve efficiency of park operations and maintenance activities, and improve protection of the light station's natural systems.

The following graphic and matrix provide an overview of primary treatment recommendations for the Devils Island Light Station. For further explanation of the treatment recommendations and graphic representations refer to Volume IV of VI: Devils Island CLR/HSR which includes a reservation plan; a description of clearing/revegetation practices; a discussion on ABAAS compliance within the light station grounds; and detailed treatments for individual landscape features.

PHOTOGRAPHS



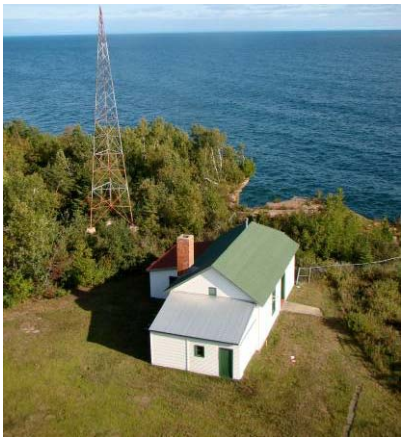
Light Tower



Keepers Quarters

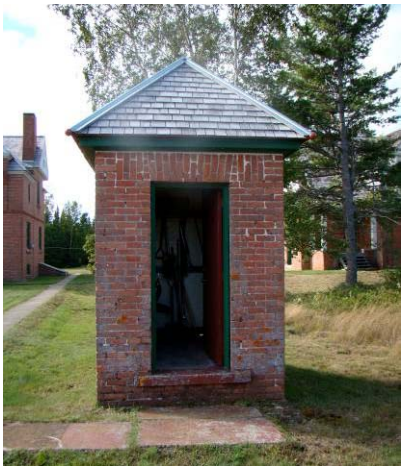


Assistant Keepers Quarters



Fog Signal Building

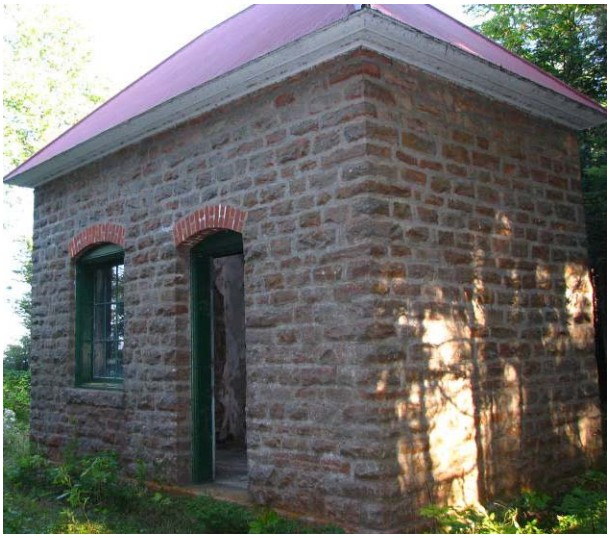
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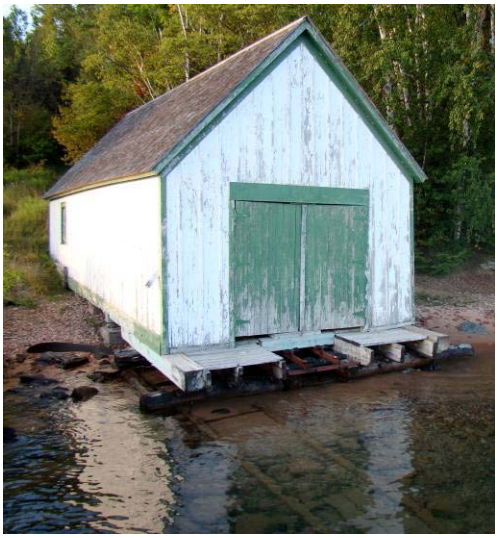
Oil House #1



Oil House #2



Tramway Engine Building

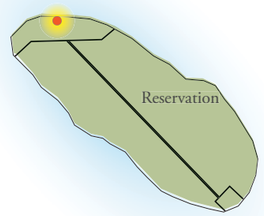


Boathouse

Devils Island Preferred Treatment Alternative

Rock Outcroppings
Edge of Cliff
Maintain Trail (Clear Vegetation)
Maintain as Low Brush
Maintain Pump House
Stabilize Derrick Footings
Maintain All Concrete Walks
Area of Nonextant Wood Structure
Maintain Fence
Repair Masonry Tram Terminal
Area of Nonextant Storehouse
Maintain Radio Tower
Maintain Fog Beacon Frame
Stabilize Tram Tracks
Retain Wooden Post
Maintain Rosebush
Area of Nonextant Original Tower
Preserve Oil House
Rehabilitate Fog Signal Building
Reset Concrete Paving Stones
Maintain Tram Track Corridor (10' width)
Fog Signal Building
Oil House-2
Oil House-1
Maintain Trail to West Landing
Preserve Oil House
Mark Location of Nonextant Asst. Keepers Quarters
Maintain all Concrete Walks
Retain Oil Tank Footings
Retain Propane Tank
Remove Basin, Fuel Tanks, and Concrete Footings
Clear Trees and Maintain as Low Brush
Maintain Flagpole
Maintain as Lawn Clearing
Maintain Well Head
Area of Nonextant Barn
Light Tower
Keepers Quarters
Rehabilitate Light Tower
Maintain Lilac
Rehabilitate Keepers Quarters
Maintain Hiking Trail
Maintain as Lawn Clearing
Maintain Trail to West Landing
Rehabilitate Assistant Keepers Quarters
Assistant Keepers Quarters
Historic Edge of Cleared Area
Location of Nonextant Privies and Walks
Wilderness Boundary
Maintain Road Corridor as Trail (10' width)

See Inset for Tramway Area



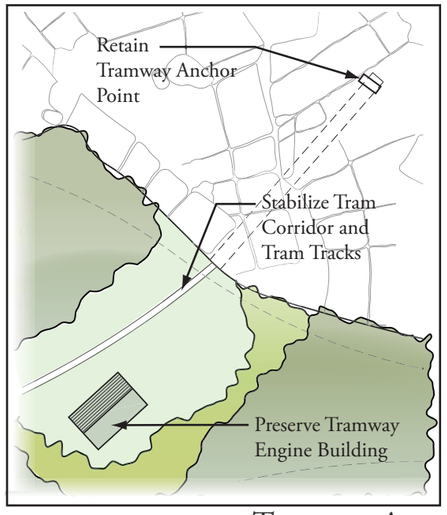
Devils Island

N

Legend

- Lawn Clearing
- Forest
- Low Brush Clearing
- Wilderness Boundary
- Edge of Historic Cleared Area
- Existing Edge of Forest

Note: Features in *italics* are Noncontributing



Tramway Area

N E W S
0 30 60

SITE IMAGE DI-71

UNITED STATES
DEPARTMENT OF THE INTERIOR
APOSTLE ISLANDS NATIONAL LAKESHORE

JUNE 2011

TITLE OF PROJECT
HISTORIC STRUCTURE REPORT, CULTURAL LANDSCAPE REPORT & ENVIRONMENTAL ASSESSMENT
TREATMENT ALTERNATIVES

TITLE OF DRAWING
DEVILS ISLAND LIGHT STATION

NAME OF PARK
APOSTLE ISLANDS NATIONAL LAKESHORE

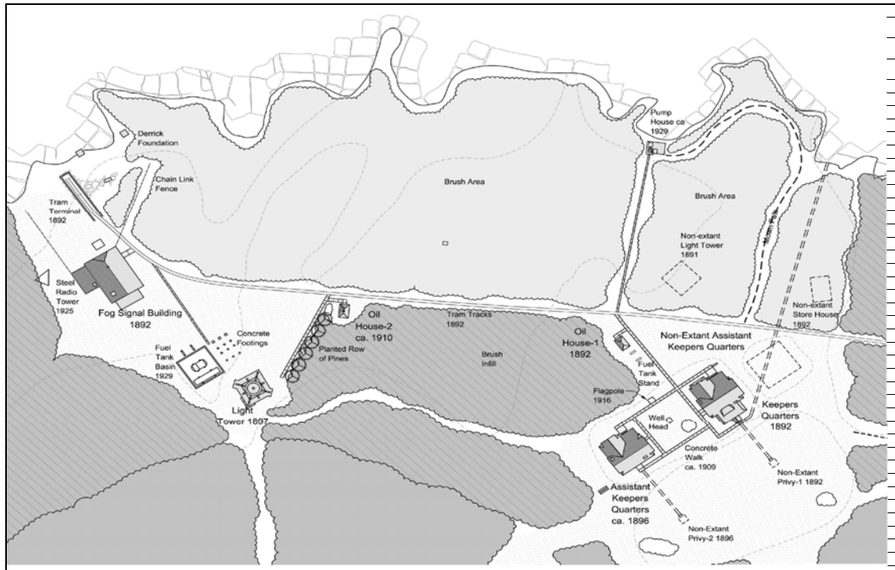
REGION MIDWEST | COUNTY ASHLAND | STATE WISCONSIN

DEVILS ISLAND

PREFERRED ALTERNATIVE: REHABILITATION A

A NAVIGATIONAL CONTINUUM

REVISED 07.12.2011



Existing Conditions Site Plan - for reference only

General Description:
This treatment alternative proposes rehabilitating each island's cultural landscape to best portray the continuum of navigational history that characterizes the Apostle Islands as a system of light stations. Each island (and each light station) conveys specific characteristics related to particular periods of development in the navigation of the archipelago. This treatment will reveal this continuum by restoring missing historic features, and by repairing or altering others to convey the full historical significance of the system. Additions that are necessary to enable the compatible use of the light stations or islands are allowed as long as portions or features that convey the historical, cultural, or architectural values are preserved.

Period of Significance: 1892 - 1978

Please refer to the proposed treatments below.

	Tower	Keepers Quarters	Assistant Keepers Quarters	Fog Signal Building	Oil House #1	Oil House #2	Tramway Engine Building	Boathouse
Proposed Use of Building	Rehabilitate for guided visitor use.	Rehabilitate for guided visitor use 1st floor; staff housing 2nd floor and 1st kitchen/bath.	Rehabilitate for self guided visitor use.	Rehabilitate for self guided visitor use.	Preserve and maintain current use as NPS storage.	Preserve and add a plexi panel at door for visitor visual access.	Preserve and maintain current use as vacant, no visitor access.	Preserve and maintain current use as NPS storage.
Architecture	Increase ventilation; Repair/replace the lantern glazing and glass; repair/replace broken/missing mullions; repaint exterior complete; repair operability to windows; investigate replacing one sash with a secure louver; repair doors and paint; Investigate limiting visitor access to Fresnel lens and enhancing visitor viewing of lens from the exterior.	Replace south entry roof shingles; repair windows and doors and repaint; add handrail to porch; repair basement hatch; repair interior doors; retain and repair modern and historic wall, ceiling and floor finishes.	Add gutter and downspout to porch; repoint masonry (minimal); repair porch floor; repaint wall shingles and trim; repair windows and doors and repaint; replace missing interior trim, doors and fixtures in kind; patch and repair damaged plaster at walls and ceilings; refinish wood trim, casework and wood flooring; repair resilient flooring.	Install missing eave closure trim; repair framing at south shed; repoint chimney and exposed brick foundation; repair chipped siding shingles; repair windows and doors and repaint; repaint exterior trim, repair interior doors, walls and ceiling finishes; paint interior complete; add handrail to stair. Install the original fog signal equipment currently stored on Sand Island, though system is not intended to be operational.	Repair door. Repoint masonry.	Provide new roof shingles to match existing. Repaint door. Install plexi-panel system(operable) to allow visitors to see Coast Guard era equipment but maintain security and weather tight closure.	Repaint soffit and overhangs; repoint chimney and repair cap; repair sills and glazing at windows; replace missing hardware at door and repaint.	Address roofing and siding as needed after structural mitigation is complete; repair doors, window and sill; repaint exterior complete.
Structural	Investigate structural significance of concrete foundation cracking	Repair first floor framing at cut beam, repair porch joists and decking, properly support first floor joists at windows and cistern, repair damaged first floor joists	Repair porch joists and decking, properly support first floor joists at windows, repair damaged first floor joists, repairs stair posts in basement, repoint cracked masonry	Replace south addition, strengthen ceiling joists and roof rafters of west addition	No action at this time	No action at this time	Monitor stress crack at southeast.	Construct a concrete foundation, repair and strengthen first floor joists and deck, strengthen or reframe walls, strengthen or reframe roof
Mechanical	Increase ventilation for moisture control.	Increase ventilation for moisture control. Clean, inspect, and test sewer/septic system. Perform repairs as needed for operational septic system. Replace or refurbish historic radiators. Remove propane piping to refrigerator and stove.	Increase ventilation for moisture control. Clean historic radiators as interpretative props. Remove or reinstall unattached plumbing fixtures. Cap or remove open plumbing piping.	No action at this time.	No action at this time.	No action at this time.	No action at this time.	No action at this time.
Electrical	Provide additional PV power to facilitate running of new ventilation equipment. Engage an LPI (Lightning Protection Institute) certified inspector to perform an inspection of the lightning protection system and provide findings and recommendations in accordance with LPI-175.	Provide new power wiring, receptacles and lighting for visitor areas and staff housing areas. Provide required life safety systems including single station fire alarm and CO sensors. Leave existing fire alarm system in place to maintain historic context. Verify that existing PV system including inverter and power distribution system is suitably sized and fully operational, and extend system to building equipment. Engage an LPI (Lightning Protection Institute) certified inspector to perform an inspection of the lightning protection system and provide findings and recommendations in accordance with LPI-175.	Provide additional PV power to facilitate running of new ventilation equipment as needed. Replace broken or missing lighting fixtures and receptacles with period fixtures and receptacles. If required, provide building power distribution and wiring and connect building to site PV system. Engage an LPI (Lightning Protection Institute) certified inspector to perform an inspection of the lightning protection system and provide findings and recommendations in accordance with LPI-175.	Replace broken lighting fixtures and rehabilitate wiring systems.	No action at this time.	No action at this time.	No action at this time.	No action at this time.
HazMat	Soil characterization (lead); field screen of tank storage area for hydrocarbon characterization	Soil characterization (lead); asbestos sampling of materials to be preserved/stabilized; remove lead paint	Soil characterization (lead); asbestos sampling of materials to be preserved/stabilized; remove/stabilize lead paint	Soil characterization (lead); asbestos sampling of materials to be preserved/stabilized; abatement of damaged asbestos siding; remove lead paint (interior of structure)	Remove/stabilize lead paint	Remove/stabilize lead paint	Asbestos sampling of materials to be preserved/stabilized; remove/stabilize lead paint	Remove/stabilize lead paint
Accessibility	Program access through interpretive wayside exhibits.	Program access through interpretive wayside exhibits.	Program access through interpretive wayside exhibits.	Program access through interpretive wayside exhibits.	Program access through interpretive wayside exhibits.	Program access through interpretive wayside exhibits.	Program access through interpretive wayside exhibits.	Program access through interpretive wayside exhibits.

LONG ISLAND SUMMARY

STUDY AREA

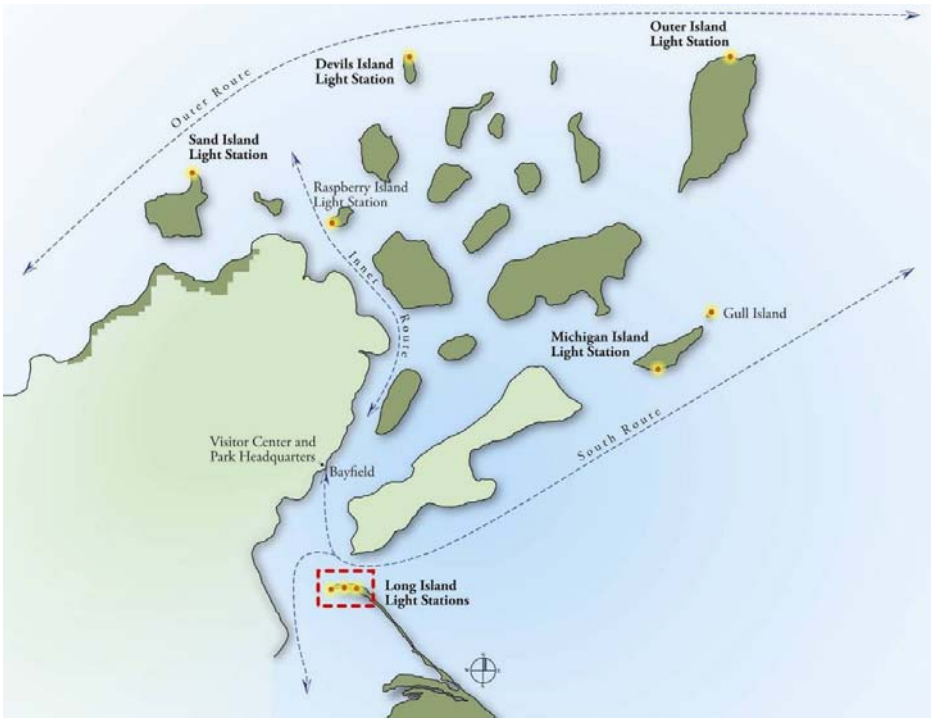
The study area encompasses the Long Island Light Station Reservation and includes the LaPointe Light Tower site, the Original Lighthouse site and the Chequamegon Point site. The National Park Service (NPS) portion of Long Island is presently 2.1 miles-long, 0.23 wide, 297 acres, and is located at the southern edge of the park, approximately 6 miles from Bayfield, Wisconsin and 26 miles from Little Sand Bay. The island is a narrow barrier spit and faces Lake Superior to the north and Chequamegon Bay to the south. A barrier spit is an elongated sand ridge that extends generally parallel to the coast with a narrow connection to the mainland.[8] This means that what is referred to as Long Island is presently not an island, but has been part of a peninsula since the mid-1970s.

The Long Island Light Station Reservation occupies approximately 152 acres at the western end of the barrier spit. Long Island includes three sites; two of the sites are currently active with working navigational aids and one has been abandoned. The active sites are Chequamegon Point and LaPointe. Chequamegon Point is at the western end of the island and marks the entry into Chequamegon Bay. LaPointe is along the island's northern shore in the center of the barrier spit; and at the eastern end of the light station reservation. The abandoned site, known as the Original LaPointe Lighthouse is the location of the first lighthouse on the island (now a ruin) and is approximately midway between Chequamegon Point and the LaPointe site. The navigational aids on Long Island are the southernmost navigational aids encountered when traveling south toward Ashland, marking the entrance to Chequamegon Bay.

The three sites are surrounded by red pine, hill's oak, or jack pine forest; swales with sphagnum-sedge bogs; and areas of dune vegetation. The grounds consist of historic clearings, buildings, structures, features, and vegetation.

Today, the island is part of the Apostle Islands National Lakeshore under the jurisdiction of the NPS. The LaPointe Light Tower and Coast Guard Culvert Tower at Chequamegon Point continue to serve as navigational aids with two automated lights and other aids maintained by the Coast Guard. The NPS maintains the site and buildings, and the light station is frequented by visitors and park staff for its cultural and natural resources.

[8] *APIS GMP*, page 169



Long Island Light Station Context Map (Source: MBD 2010)

SIGNIFICANCE OF LONG ISLAND LIGHT STATION

Long Island is important to the Apostle Islands system because of its role in the initiation of the light station development in the Apostle Islands and its essential location in guiding ships into Chequamegon Bay. The history of the Long Island Light Station is intertwined with the first light station in the Apostle Islands built on Michigan Island in 1856. The period of significance for the Long Island Light Station is from 1858 to 1964, beginning with the initial development of the light station and continuing until the automation of both towers. The entire 160 acres of the Long Island Light Station Reservation comprises its cultural landscape. However, the majority of its contributing features are consolidated in three sites totaling approximately 2 acres.

Seven contributing buildings on the LCS include the LaPointe Light Tower, Chequamegon Point Light Tower, Triplex, Oil Building, Fog Signal Building Foundation, Original LaPointe Lighthouse Oil Building, and Original LaPointe Lighthouse ruin. Contributing features include the historic clearings, vegetation, organization of buildings and structures, concrete walks, small scale features, Original LaPointe Lighthouse ruin, and Fog Signal Building foundation.

With many of its original features intact and in good condition, the Long Island Light Station portrays the history of the light station as a navigational aid. It continues to convey the development of navigational technology, the story of the people who resided at the light station, and its management. Of the six Apostle Island light stations, Long Island best portrays the greatest breadth of history, range of technological advancements, and various methods of light station operations and management. The Triplex building on the LaPointe site includes the only example of a 1930s Works Progress Administration project on the Apostle Islands light stations.

TREATMENT RECOMMENDATIONS SUMMARY

The treatment recommendations for the Long Island Light Station are focused on revealing the role the light station has in the navigational history of the Apostle Islands, and in conveying the historical significance of the light station's cultural landscape and historic structures. The treatment recommendations are addressed in detail in the CLR/HSR.

Rehabilitation has been identified as the general treatment approach for the Long Island Light Station, as it is a holistic approach that addresses the island's extant cultural resources and the relationships between those resources. This approach protects those characteristics and features that convey the island's full historical and cultural significance, while allowing for repairs, alterations, and additions necessary for the compatible use of the island.[9]

Rehabilitation also allows for noncontributing, compatible features to remain, and for the removal or relocation of noncontributing, noncompatible features. While the overall treatment intent of the cultural landscape is one of rehabilitation, many individual treatment recommendations focus on preservation of existing features. Treatment recommendations include the following:[10]

1) Reestablish a portion of the historic cleared area at the three sites;
2) Reestablish views from Lake Superior and Chequamegon Bay to the light station;
3) Repair circulation features, including the concrete walks;
4) Remove noncompatible features;
5) Rehabilitate the LaPointe Light Tower and Chequamegon Point Light Tower; and
6) Preserve the Triplex and Oil Building.

The treatment recommendations are comprehensive and are intended to address all aspects of the cultural landscape and historic structures. To achieve full implementation of these recommendations, a phased approach for construction activities would be required. Initial actions may include basic preservation measures to protect and stabilize contributing features, followed by more detailed repair measures as park resources allow.

In addition to recommendations for physical improvements, actions are proposed to improve visitor access, improve efficiency of park operations and maintenance activities, and improve protection of the light station's natural systems.

The following graphic and matrix provide an overview of primary treatment recommendations for the Long Island Light Station. For further explanation of the treatment recommendations and graphic representations refer to Volume V of VI: Long Island CLR/HSR which includes a reservation plan; a description of clearing/revegetation practices; a discussion on ABAAS compliance within the light station grounds; and detailed treatments for individual landscape features.

[9] Page et al. 1998.
[10] A glossary of terms used to describe treatment recommendations is included in the "Glossary of Terms" at the end of each islands' volume.

PHOTOGRAPHS



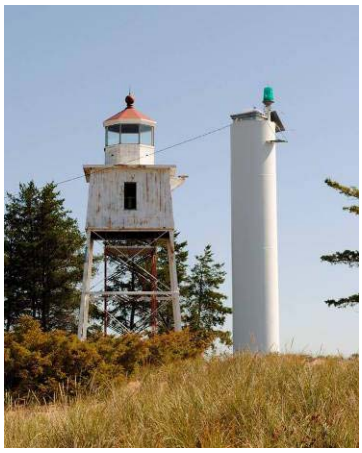
LaPointe Light Tower



LaPointe Light Tower



Chequamegon Point Light Tower



Chequamegon Point Light Tower

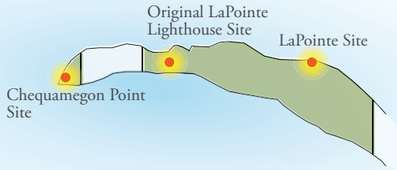


Triplex



Oil Building

Long Island Reservation Preferred Treatment Alternative



Long Island

Lake Superior

Legend

- Dune Vegetation (not managed)
- Forest
- Managed Dune Vegetation
- Beach/ Sand

Note: Features in *italics* are Noncontributing

HISTORIC RESERVATION BOUNDARY

Retain Overhead Electric Line and Poles

Original LaPointe Lighthouse Site

HISTORIC RESERVATION BOUNDARY

Retain Overhead Electric Line and Poles

LaPointe Site

Reestablish Corridor (10' width) for Cross-Island Path

Chequamegon Point Site

Chequamegon Bay

Reestablish Corridor (10' Width) for Cross-Island Path

HISTORIC RESERVATION BOUNDARY

N W E S

0 250 500

SITE IMAGE LI-75

UNITED STATES
DEPARTMENT OF THE INTERIOR
APOSTLE ISLANDS NATIONAL LAKESHORE

JUNE 2011

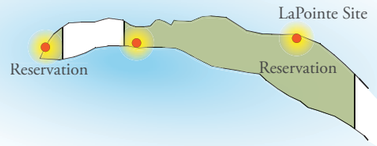
TITLE OF PROJECT
HISTORIC STRUCTURE REPORT, CULTURAL LANDSCAPE REPORT & ENVIRONMENTAL ASSESSMENT
TREATMENT ALTERNATIVES

TITLE OF DRAWING
LONG ISLAND - RESERVATION BOUNDARY

NAME OF PARK
APOSTLE ISLANDS NATIONAL LAKESHORE

REGION: MIDWEST
COUNTY: ASHLAND
STATE: WISCONSIN

Long Island
LaPointe Site
Preferred
Treatment Alternative



Reestablish Historic View of Light Station

Maintain Dock in Current Location

Retain Pipe Crib

Clear Trees Maintain as Dune Vegetation

Retain Floating Boardwalk. Allow for Removal and Replacement as Dunes Shift.

Retain Remnant Boardwalk

Maintain Cleared Corridor in Historic Boardwalk Alignment

Maintain Cistern and Piping. Provide Lockable Cover to Prevent Safety Hazards.

Clear Trees 50' from Buildings. Maintain as Dune Vegetation

Remove Utility Units

Repair Flagpole

Rehabilitate LaPointe Light Tower

Retain Overhead Electric Line and Poles

Light Tower

Repair all Concrete Walks

Retain Concrete Radio Tower Footings - A

Maintain Fog Signal Building Foundation

Fog Signal Foundation

Triplex

Preserve Triplex

Retain Rubble Pile

Reestablish Corridor (10' width) for Cross Island Path

Oil Building

Remove Fuel Tank

Area of Further Investigation - Locate Concrete Walk

Stabilize Shed

Preserve Oil Building

Retain Septic Bed

Maintain Area for Path (4' width). Retain Corrugated Metal

Retain Concrete Radio Beacon Tower Footings - B

Long Island
Legend

- Dune Vegetation (not managed)
- Forest
- Managed Dune Vegetation
- Sand
- Existing Edge of Vegetation

Notes:
1.) Features in *italics* are Noncontributing
2.) New Accessible NPS Restroom to be added. Location to be determined

N W E S

0 30 60

SITE IMAGE LI-76

UNITED STATES
DEPARTMENT OF THE INTERIOR
APOSTLE ISLANDS NATIONAL LAKESHORE

JUNE 2011

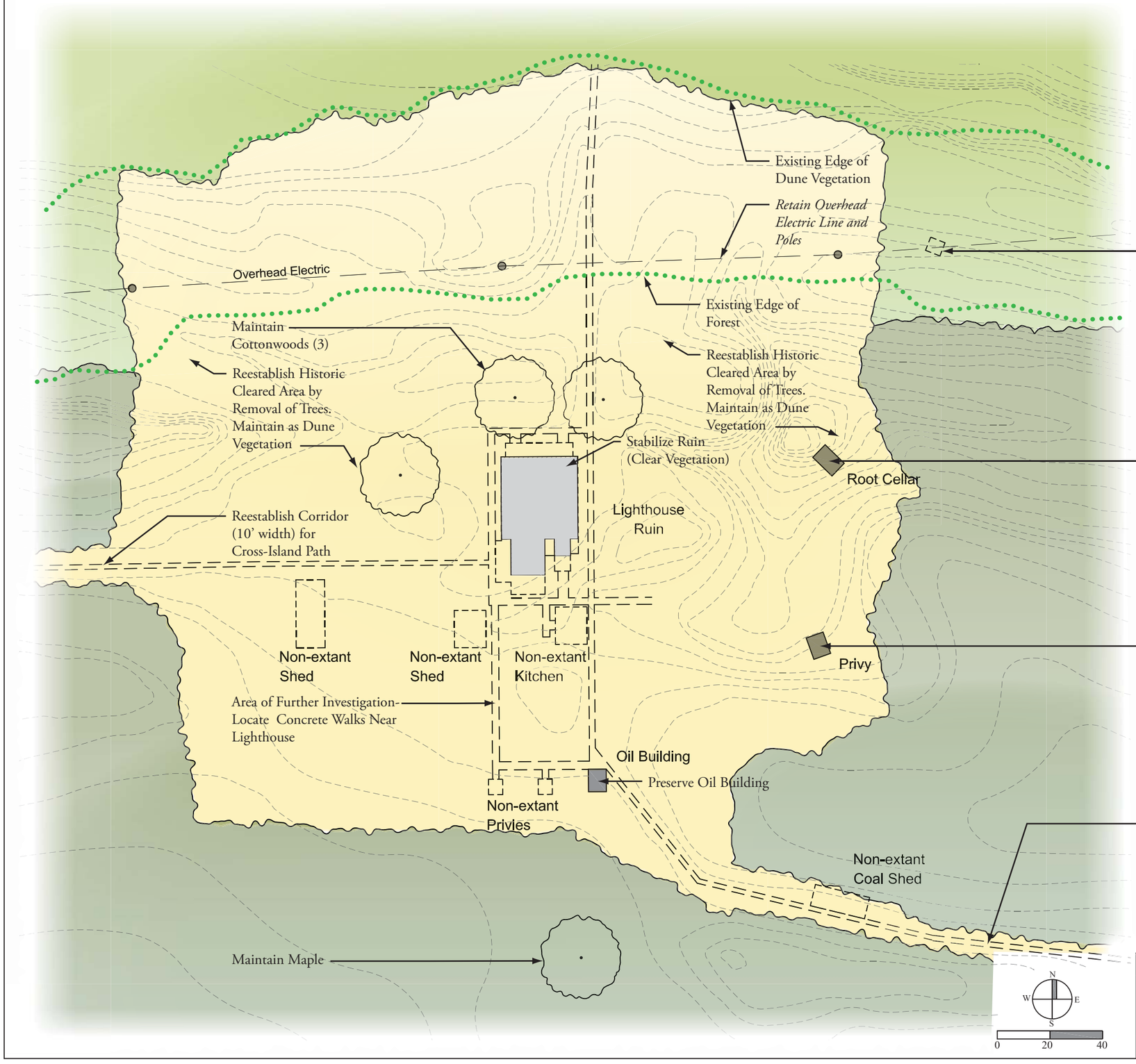
TITLE OF PROJECT
HISTORIC STRUCTURE REPORT, CULTURAL LANDSCAPE REPORT & ENVIRONMENTAL ASSESSMENT
TREATMENT ALTERNATIVES

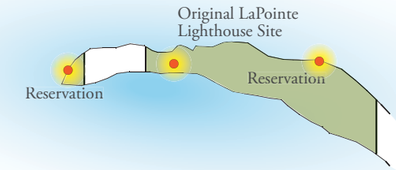
TITLE OF DRAWING
LONG ISLAND - LAPOINTE LIGHT STATION

NAME OF PARK
APOSTLE ISLANDS NATIONAL LAKESHORE

REGION	COUNTY	STATE
MIDWEST	ASHLAND	WISCONSIN

Long Island Original LaPointe Lighthouse Preferred Treatment Alternative





Long Island

Legend

- Dune Vegetation (not managed)
- Forest
- Managed Dune Vegetation
- Existing Edge of Vegetation

Note: Features in *italics* are Noncontributing

SITE IMAGE LI-77

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APOSTLE ISLANDS NATIONAL LAKESHORE

JUNE 2011

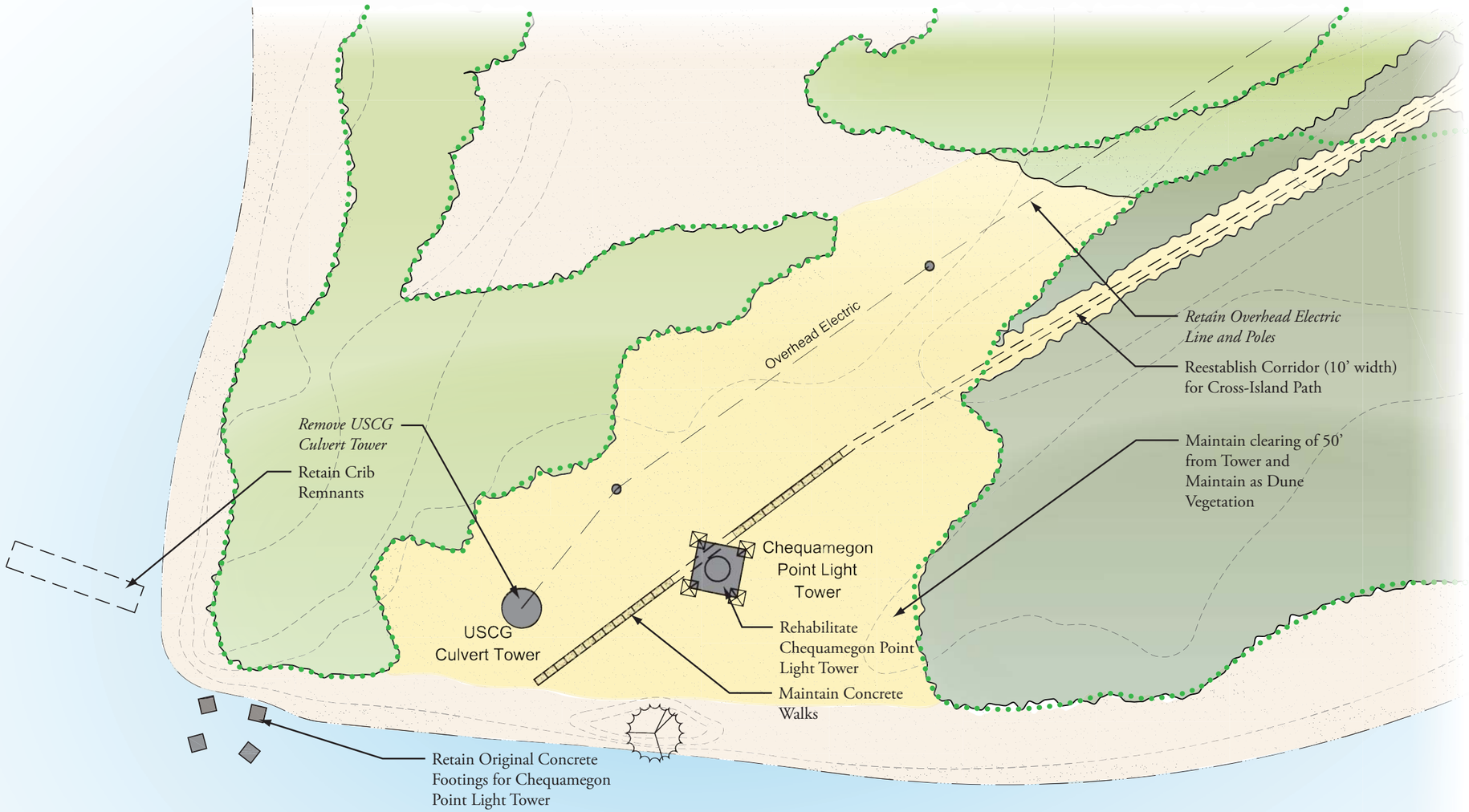
TITLE OF PROJECT
HISTORIC STRUCTURE REPORT, CULTURAL LANDSCAPE REPORT & ENVIRONMENTAL ASSESSMENT
TREATMENT ALTERNATIVES

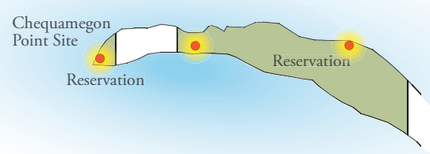
TITLE OF DRAWING
LONG ISLAND - ORIGINAL LAPOINTE LIGHTHOUSE

NAME OF PARK
APOSTLE ISLANDS NATIONAL LAKESHORE

REGION	COUNTY	STATE
MIDWEST	ASHLAND	WISCONSIN

Long Island Chequamegon Point Preferred Treatment Alternative



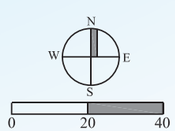


Long Island

Legend

- Dune Vegetation (not managed)
- Sand/ Beach
- Managed Dune Vegetation
- Forest
- Existing Edge of Vegetation

Note: Features in *italics* are Noncontributing



SITE IMAGE LI-78

UNITED STATES
DEPARTMENT OF THE INTERIOR
APOSTLE ISLANDS NATIONAL LAKESHORE

JUNE 2011

TITLE OF PROJECT
HISTORIC STRUCTURE REPORT, CULTURAL LANDSCAPE REPORT & ENVIRONMENTAL ASSESSMENT TREATMENT ALTERNATIVES

TITLE OF DRAWING
LONG ISLAND - CHEQUAMEGON POINT SITE

NAME OF PARK
APOSTLE ISLANDS NATIONAL LAKESHORE

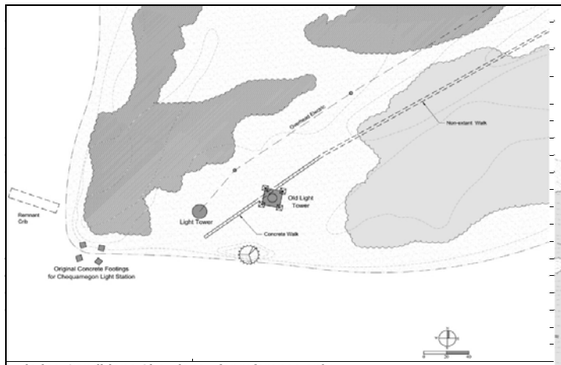
REGION	COUNTY	STATE
MIDWEST	ASHLAND	WISCONSIN

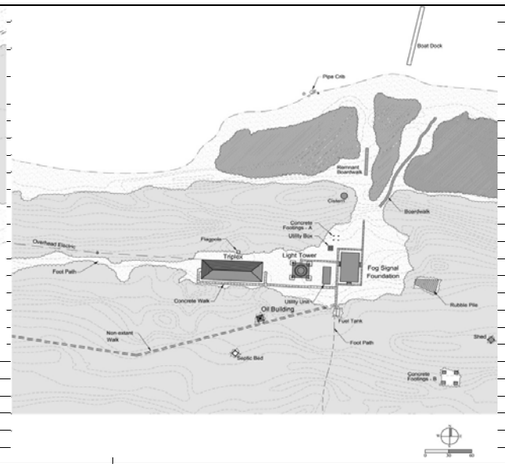
LONG ISLAND

PREFERRED ALTERNATIVE: REHABILITATION A

A NAVIGATIONAL CONTINUUM

REVISED 07.12.2011





Existing Conditions Site Plans - for reference only

General Description:
This treatment alternative proposes rehabilitating each island's cultural landscape to best portray the continuum of navigational history that characterizes the Apostle Islands as a system of light stations. Each island (and each light station) conveys specific characteristics related to particular periods of development in the navigation of the archipelago. This treatment will reveal this continuum by restoring missing historic features, and by repairing or altering others to convey the full historical significance of the system. Additions that are necessary to enable the compatible use of the light stations or islands are allowed as long as portions or features that convey the historical, cultural, or architectural values are preserved.

Period of Significance: 1858 - 1964

Please refer to the proposed treatments below.

	LaPointe Tower	Chequamegon Pt Lighthouse	Triplex	Oil Building	
Proposed Use of Building	Rehabilitate for guided visitor access.	Rehabilitate; no visitor access.	Preserve and maintain current use as vacant.	Preserve and maintain current use as vacant.	
Architecture	Increase ventilation at Tower; repair rust and delamination, seal joints; repair cracked glass at Lantern; repair windows and doors; paint interior and exterior complete.	Complete current rehabilitation project including: installing floor and access; installing windows; paint interior and exterior complete; Verify condition of roof and lantern.	Reroof; repair hole at soffit; repair broken wall shingles; repair windows and paint; replace missing exterior doors; repair entablature trim and north porch and paint all trim; remove all damaged gyp. board at walls and ceilings, patch in-kind; no interior paint/finish work; install moisture barrier at foundation.	Repaint roof and walls; repair door; mitigate moisture issues at masonry.	
Structural	Investigate structural significance of concrete foundation cracking, investigate structural significance of cracked bell fittings	No action at this time	Stop the moisture coming through the foundation walls, reduce the humidity in the basement to reduce the moisture content of the first floor joists, repair the first floor joists and sheathing, properly frame the first floor joists at the windows, repair the roof	No action at this time	
Mechanical	Increase ventilation for moisture control.	No action at this time.	Increase ventilation for moisture control. Cap and seal open sewer piping. Remove abandoned plumbing fixtures and unused mechanical components.	Clean and paint roof vent.	
Electrical	Provide PV power system to facilitate running of new ventilation equipment. Engage an LPI (Lightning Protection Institute) certified inspector to perform an inspection of the lightning protection system and provide findings and recommendations in accordance with LPI-175.	Remove overhead conductors (de-energized) from newer light structure and connect them with suitable distribution equipment to historic tower. Investigate possibility of moving existing USCG light (USCG Aids to Navigation) from USCG Culvert tower to Historic Tower and removing USCG Culvert Tower. Engage an LPI (Lightning Protection Institute) certified inspector to perform an inspection of the lightning protection system and provide findings and recommendations in accordance with LPI-175.	Provide PV Array and storage battery system to provide power for increased ventilation.		
HazMat	Soil characterization (lead); remove/stabilize lead paint	Soil characterization (lead); remove/stabilize lead paint	Bat guano abatement; water intrusion/mold mitigation; soil characterization (lead); asbestos sampling of materials to be preserved/stabilized; abatement of damaged asbestos siding; remove/stabilize lead paint	Remove/stabilize lead paint	
Accessibility	Program access through interpretive wayside exhibits.	Program access through interpretive wayside exhibits.	Program access through interpretive wayside exhibits.	Program access through interpretive wayside exhibits.	

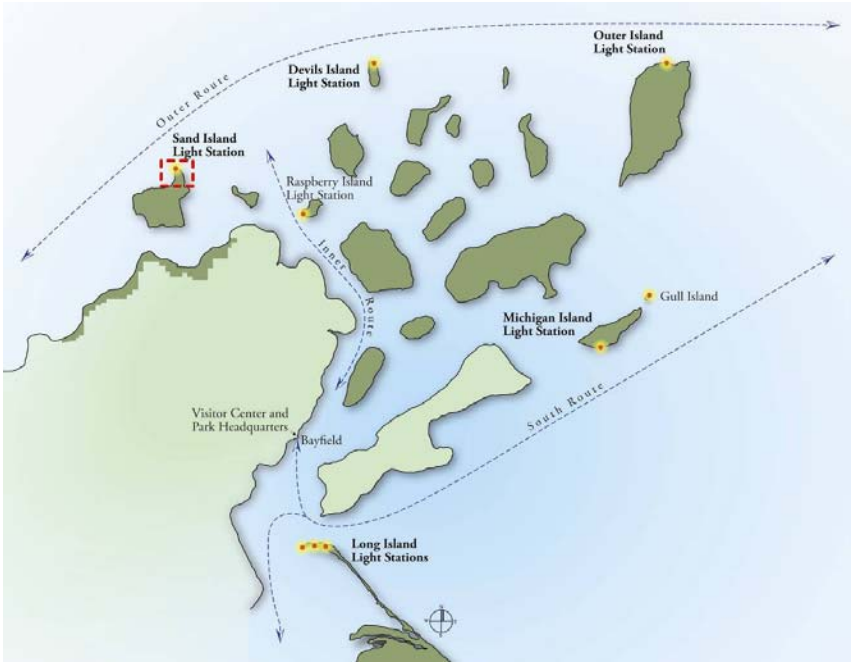
SAND ISLAND SUMMARY

STUDY AREA

The study area encompasses the Sand Island Light Station Reservation, light station grounds and Boathouse site. Sand Island is 2.8 miles long, 2.8 miles wide and 2,949 acres. The island is located at the western edge of the park, approximately 19 miles from Bayfield, Wisconsin. The island is 3 miles from Little Sand Bay, and the lighthouse is 6 miles from Little Sand Bay. The Sand Island Light Station Reservation is on the northern end of the island and originally occupied 110 acres. [11] In 1936, the reservation was reduced to two smaller areas: one area for the light station, and one area of 2 acres for the boathouse site.[12] Both the light station reservation and the remainder of the island are a part of the Apostle Island National Lakeshore. Sand Island, along with Long Island and Basswood Island, is not included in the Gaylord Nelson Wilderness.

The Sand Island Light Station Quarters is the first navigational aid encountered on the outer route when traveling east from western Lake Superior and Duluth. The light station is on a bluff above Lake Superior and is surrounded by maturing second-growth northern hardwood forest. The light station grounds consist of historic clearings, buildings, structures, features, and vegetation.

Today, the island is part of the Apostle Islands National Lakeshore under the jurisdiction of the National Park Service (NPS). The light station continues to serve as a navigational aid with the automated light operated and maintained by the Coast Guard. The NPS maintains the site and buildings, and the light station is frequented by visitors and park staff for its cultural and natural resources.



Sand Island Light Station Context Map (Source: MBD 2010)

[11] Wisner Drawing
[12] USCG Drawing, 1936

SIGNIFICANCE OF SAND ISLAND LIGHT STATION

The Sand Island Light Station is along the outer shipping route and is unique to the system of light stations in the Apostle Islands in several ways. Sand Island was a residential community and unlike other light stations, the Sand Island Light Station and the lighthouse keepers were part of the community. In 1921, the Sand Island Light Station was the first light station automated within the archipelago. After automation, the lighthouse was leased as a summer residence. The lighthouse itself was constructed of locally quarried brownstone. The period of significance is from 1881 to 1921, beginning with the initial development of the light station and continuing until automation of the Light Station Quarters. The entire original 110 acres of the Sand Island Light Station Reservation comprises its cultural landscape. The majority of its contributing features occur on a core area of 1.5 acres associated with the light station grounds on the northern end of the island.

Contributing features of the cultural landscape include the historic clearings, vegetation, organization of buildings and structures, concrete walks, small scale features, and the bluff. Three contributing buildings on the LCS include the Light Station Quarters, Oil Building, and Privy.

With many of its original features intact and in good condition, the Sand Island Light Station portrays the history of the light station as a navigational aid. It continues to convey the development of navigational technology, the story of the people who resided at the light station, and its management.

TREATMENT RECOMMENDATIONS SUMMARY

The treatment recommendations for the Sand Island Light Station are focused on revealing the role the light station has in the navigational history of the Apostle Islands, and in conveying the historical significance of the light station's cultural landscape and historic structures. The treatment recommendations are addressed in detail in the CLR/HSR.

Rehabilitation has been identified as the general overall treatment approach for the Sand Island Light Station, as it is a holistic approach that addresses the island's extant cultural resources and the relationships between those resources. This approach protects those characteristics and features that convey the island's full historical and cultural significance, while allowing for repairs, alterations, and additions necessary for the compatible use of the island.[13]

Rehabilitation also allows for noncontributing, compatible features to remain; the removal or relocation of noncontributing, noncompatible features; and the restoration of historic structures. While the overall treatment intent of the cultural landscape is one of rehabilitation, many individual treatment recommendations focus on preservation of existing features. Treatment recommendations include the following:[14]

1) Reestablish a portion of the historic cleared area of the light station;
2) Maintain views from Lake Superior to the light station;
3) Repair circulation features, including the concrete walks;
4) Reestablish missing landscape plantings;
5) Remove noncompatible features;
6) Restore the Light Station Quarters; and
7) Preserve the Oil Building and Privy.

The treatment recommendations are comprehensive and are intended to address all aspects of the cultural landscape and historic structures. To achieve full implementation of these recommendations, a phased approach for construction activities would be required. Initial actions may include basic preservation measures

[13] Page et al. 1998.
[14] A glossary of terms used to describe treatment recommendations is included in the "Glossary of Terms" at the end of each islands' volume.

to protect and stabilize contributing features, followed by more detailed repair measures as park resources allow.

In addition to recommendations for physical improvements, actions are proposed to improve efficiency of park operations and maintenance activities, and improve protection of the light station's natural systems.

The following graphic and matrix provide an overview of primary treatment recommendations for the Sand Island Light Station. For further explanation of the treatment recommendations and graphic representations refer to Volume VI of VI: Sand Island CLR/HSR which includes a reservation plan; a description of clearing/revegetation practices; a discussion on ABAAS compliance within the light station grounds; and detailed treatments for individual landscape features.

PHOTOGRAPHS



Sand Island Light Station Quarters



Sand Island Light Station Quarters



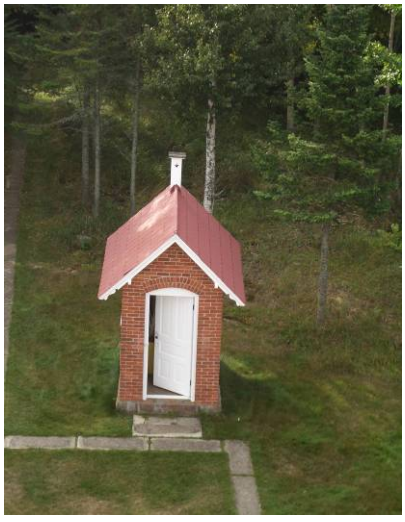
Sand Island Light Station Quarters



Sand Island Light Station Quarters

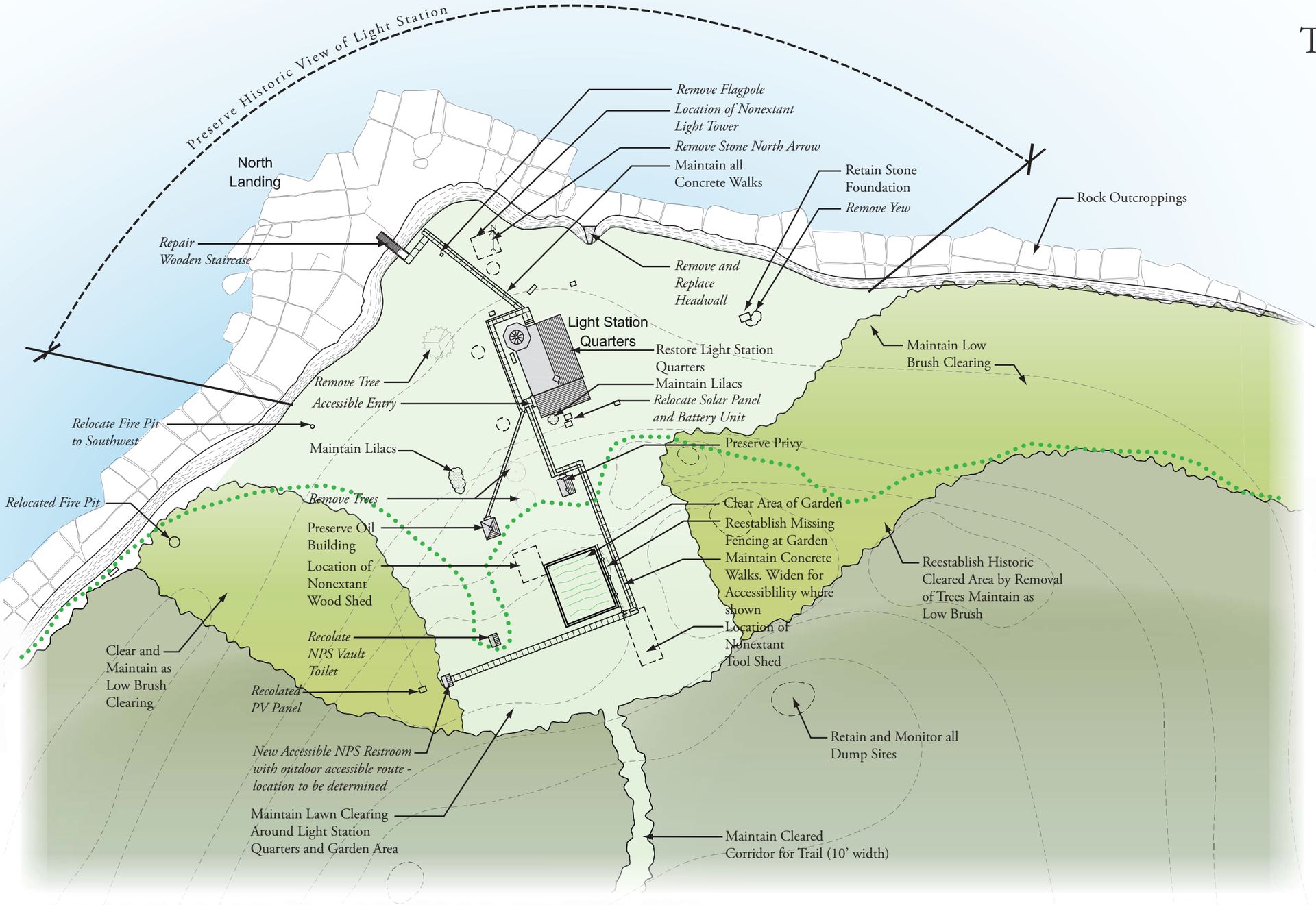


Oil Building



Privy

Sand Island Preferred Treatment Alternative



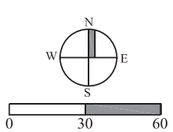


Sand Island

Legend

- Lawn Clearing
- Forest
- Low Brush Clearing
- Existing Edge of Forest
- Former location of Lilacs/Garden Bed

Note: Features in *italics* are Noncontributing



SITE IMAGE SI-69

UNITED STATES
DEPARTMENT OF THE INTERIOR
APOSTLE ISLANDS NATIONAL LAKESHORE

JUNE 2011

TITLE OF PROJECT
HISTORIC STRUCTURE REPORT, CULTURAL LANDSCAPE REPORT & ENVIRONMENTAL ASSESSMENT
TREATMENT ALTERNATIVES

TITLE OF DRAWING
SAND ISLAND LIGHT STATION

NAME OF PARK
APOSTLE ISLANDS NATIONAL LAKESHORE

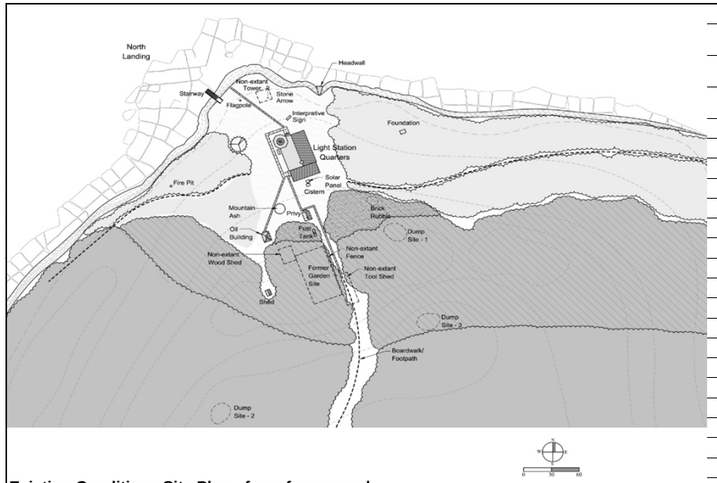
REGION	COUNTY	STATE
MIDWEST	BAYFIELD	WISCONSIN

SAND ISLAND

PREFERRED ALTERNATIVE: RESTORATION, LUICK PERIOD (c.1881-1921)

A NAVIGATIONAL CONTINUUM

REVISED 07.12.2011



Existing Conditions Site Plan - for reference only

General Description:
This alternative brings forward the story of navigation of Apostle Islands as a system of six light stations through the rehabilitation of the cultural landscape with an emphasis on restoration. The intent is to rehabilitate individual light stations to best convey the period that is most significant to the island and that most successfully depicts its role in navigation during the period of significance. Restoration of missing features is allowed under this treatment alternative as is removal of non-contributing features, and repair of contributing features. Restoration of missing features may occur where the significance of the feature or space outweighs the loss of extant features, and where substantial physical and documentary evidence exist for the restoration.

Period of Significance: 1881-1921

	Light Station Tower & Quarters	Oil Building	Privy		
Proposed Use of Building	Restore to pre-1921 era visitor access for both floors and Tower. "Shelter" housing at second floor.	Preserve and maintain current use as NPS storage.	Preserve; plexi panel at door to allow visitor visual access.		
Architecture	Reroof and correct existing gutter drainage problems; Increase ventilation from basement to tower; repair spot rusting at the Tower; Replace broken/missing glass at the Lantern; Repair access door to walk; add handrails at stairs; Restore openings and closet at front bedroom; Repair plaster/gyp at areas of damage on walls and ceilings; Repaint walls, ceilings, windows, doors and trim on interior; Add ramping at exterior for ABAAS access; Investigate if original flooring is in situ remove newer flooring as possible; Refinish wood floors; investigate adding a guardrail at the Tower walk without compromising historic integrity.	Repair door hardware for operability; repaint at interior	Replace missing ball closures at ridge; Repair hardware and replace missing escutcheon; install plexi panel system (operable) to allow visitor to see in but closeable to maintain security and weather tight closure		
Structural	Reduce the humidity level to reduce the moisture content of the first floor joists, properly frame the first floor joists at the windows, investigate the roof framing of the kitchen and strengthen if necessary	No action at this time	No action at this time		
Mechanical	Increase ventilation for moisture control. Replace rusted propane piping. Drain, clean, and seal cistern under kitchen. Allow for historic rainwater capture system to be interpreted. Remove propane piping to refrigerator and stove.	No action at this time.	No action at this time.		
Electrical	Provide additional PV power to facilitate running of new ventilation equipment as needed. Remove existing lightning protection system prior to re-roofing and install new lightning protection system after re-roofing.	No action at this time.	No action at this time.		
HazMat	Water intrusion mitigation; soil characterization (lead); asbestos sampling of materials to be preserved/stabilized; remove/stabilize lead paint; general clean to remove lead dust	Remove/stabilize lead paint	Asbestos sampling of materials to be stabilized, remove/stabilize lead paint		
Accessibility	Add a freestanding ramp at the kitchen door and increase the door opening width. Exhibits and media presentation in the kitchen will provide program access to the 2nd floor and tower.	Program access through interpretive wayside exhibits.	Program access through interpretive wayside exhibits.		

APPENDICES

Appendix A: Project Team

Appendix B: Class C Summary

Appendix C: Table of Contents of Final CLR/HSR Document

1

2

APPENDIX A: PROJECT TEAM

Denver Service Center National Park Service

Project Manager	Nancy Baker, PMP
Project Specialist	Bari Hahn, AIA

NPS Midwest Regional Staff National Park Service

Chief of Historic Architecture and Landscapes	Bill Harlow
Historical Landscape Architect	Marla McEnaney

Apostle Islands National Lakeshore Staff National Park Service

Park Superintendent	Bob Krumenaker
Previous Chief of Planning and Resource Management	Jim Nepstad
Chief of Facilities	Randy Ross
Previous Branch Chief, Cultural Resources	Christy Baker
Branch Chief, Cultural Resources	Dave Cooper
Division Chief, Planning and Resource Management	Julie Van Stappen
Chief of Interpretation and Education	Myra Foster
Historic Structure Preservation Team, Supervisor	Doug Pratt

Anderson Hallas Architects, PC Architects (Prime)

Principal	Nanon Adair Anderson, AIA, LEED AP
Principal/Project Manager	Elizabeth Hallas, AIA, LEED AP
Intern	Adrienne Antonucci

Mundus Bishop Landscape Architects

Principal	Tina Bishop, ASLA
Principal	Pat Mundus, ASLA, LEED AP
Landscape Architect in-training	Taran Jensvold, ASLA

The RMH Group, Inc. Electrical and Mechanical Engineers

Electrical Engineer	Peter Eades
Mechanical Engineer	Chuck Gumeson, PE

Martin/Martin Consulting Engineers Structural Engineer

Structural Engineer	David Wittman, PE

ERO Resources Corporation Environmental Compliance

Natural Resource Specialist	Mary Powell, Vice President

Landmark Environmental, Inc. Environmental Engineers

Environmental Engineer	Meg Glade

Cultural Resource Planning Historian

Principal	Jill Seyfarth
Consulting Historian	Jane Busch

APPENDIX B: CLASS C SUMMARY

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Preferred Alternative:
Michigan, Outer, Long, Sand Islands with stabilization at Devils

MICHIGAN ISLAND

MICHIGAN ISLAND SITE					
	Quantity	Total Net	CLR/HSR Report	CLR/HSR Report Priority	Change from 2010.12.16 VA?
SITE/CULTURAL LANDSCAPE					
Site Clearing	4 ACRES	$103,101	POOR	SEVERE	N
Site Circulation/ Accessibility	1 LS	$96,652	FAIR	MODERATE	N
Site Structures	1 LS	$72,334	POOR	LOW	N
Small Scale Site Features	1 LS	$8,549	GOOD	LOW	N
Reservation Vegetation	1 LS	$6,576	FAIR to POOR	MODERATE	N
Station Vegetation	1 LS	$71,743	POOR	MODERATE	N
New Boat Dock	1	$500,000			N
					$858,955

Overall Island Assumptions:
-Focus on (4) islands: Michigan, Outer,Devils and Sand
-Triplex work on Long, by Park
-Emphasis on large-scale landscape and major buildings
-Includes localized site accessibility where noted
-Supports volunteer or staff occupancy
-No lead soil mitigation

OLD MICHIGAN ISLAND LIGHTHOUSE					
	Quantity	Total Net	CLR/HSR Report Condition	CLR/HSR Report Priority	
ARCHITECTURAL					
Hazmat Mitigation: Asbestos, lead containing paint, lead dust, lead in soils, mold and bat guano were identified or assumed to be present.	1 LS	$171,063 (No lead soil mitigation)		MODERATE and LOW	Y (refined hazmat $, post-VA)
Roof Removal and Replacement	1,459 SF	$38,646	POOR	SEVERE	N
Repair Plaster and Repoint and Coat Masonry, Exterior Walls	3,389 SF	$103,940	FAIR	MODERATE	N
Install Rain gutter and Downspouts	120 LF	$15,056	N/A	MODERATE	N
Enlarge Door Opening	1 EA	$4,879	POOR	SEVERE	N
Install Exterior Stairs	11 SF	$1,840	FAIR	SEVERE	N
Remove and Replace Interior Finishes	7,260 SF	$56,945	POOR	SEVERE	N

Refinish Existing Millwork	15 LF	$6,273	GOOD to FAIR	MODERATE	N
Install Handrails in Tower and Kitchen Entry	86 LF	$21,580	FAIR	SEVERE	N
Install Security Gate at Tower Base	1 EA	$3,625			N
Install New Glazing; Reinstall Glazing in Windows; Repaint Frames and Sash	55 SF; 164 SF; 219 SF	$30,098	FAIR	MODERATE	N
Paint Tower Roof and Trim	50 SF	$836	FAIR	MODERATE	N
Paint Miscellaneous	1 LS	$5,261			N
STRUCTURAL					
Reinforce Existing Floor Structure	62 SF	$6,050	FAIR	SEVERE	N
Reinforce Existing Roof Structure	55 SF	$4,600	GOOD	UNKNOWN	N
MECHANICAL					
Remove Plumbing Fixtures and Piping	1 LS; 2 EA	$4,182	FAIR to POOR	LOW	N
Remove Boiler and Piping; Remove Radiators	1 EA; 2 EA	$10,316	FAIR	LOW	N
HVAC - Increase Ventilation	2,154 SF	$51,049	FAIR and POOR	SEVERE	N
ELECTRICAL					
Remove Light Fixtures and Receptacles; Install Photovoltaic System	20 EA; 2,154 SF	$39,240	POOR	SEVERE	N
Replace Lightning Protection System	1,459 SF	$16,272	FAIR to POOR	SEVERE	N

$591,751

SECOND TOWER					
	Quantity	Total Net	CLR/HSR Report Condition	CLR/HSR Report Priority	Change from 2010.12.16 VA?
ARCHITECTURAL					
Hazmat Mitigation: Asbestos, lead containing paint, lead dust, lead in soils, and mold were identified or assumed to be present.	1 LS	$13,150 (No lead soil mitigation)		MODERATE and LOW	Y - refined hazmat $
Roof Repair	280 SF	$5,465	GOOD	LOW	N
Remove Exterior Plexiglass Window	10 SF	$223	FAIR	MODERATE	N
Paint Soffit and Trim	50 SF	$1,673	GOOD	LOW	N
Install Security Gate at Tower Base	1 EA	$3,625			N
Install New Glazing in Windows; Repaint Frames and Sash	10 SF; 72 SF	$5,949	FAIR	MODERATE	N
Paint Miscellaneous	1 LS	$1,315			N
STRUCTURAL					
Repair Existing Column Bases	2 EA	$16,729	GOOD	UNKNOWN - Need to investigate cracked columns.	N
MECHANICAL					
Replace or Repair Brass Vent Caps, Increase Passive Ventilation	8 EA, 262 SF	$8,113	FAIR	MODERATE	N
ELECTRICAL					
Inspect and Replace Lightning Protection System	262 SF	$4,383	FAIR	MODERATE	N

$60,625

KEEPERS QUARTERS					
	Quantity	Total Net	CLR/HSR Report Condition	CLR/HSR Report Priority	Change from 2010.12.16 VA?
ARCHITECTURAL					
Hazmat Mitigation: Asbestos, lead containing paint, lead dust, lead in soils, and mold were identified or assumed to be present.	1 LS	$125,615		MODERATE and LOW	Y- revised hazmat $, based on information/discussion w hazmat consultant, after VA
Roof Removal and Replacement	1,105 SF	$29,269	POOR	SEVERE	N
Clean and Repair Exterior Brick	2,245 SF	$15,781	GOOD	MODERATE	N
Refinish Wood Porch	126 SF	$10,539	GOOD	LOW	N
Paint Exterior Siding and Trim	200 SF	$12,268	FAIR	LOW	N
Paint Soffit and Trim	441 SF	$4,304	FAIR	LOW	N
Install Handrails at Stairs	70 LF	$17,565	FAIR	SEVERE	N
Repaint Window Frames and Sash	200 SF	$1,394	GOOD	LOW	N
Refinish Existing Wood Flooring	1,782 SF	$24,843	FAIR	MODERATE	N
Remove and Replace Interior Finishes	4,667 SF	$65,516	GOOD	MODERATE	N
Paint Miscellaneous	1 LS	$5,261			N
STRUCTURAL					
Concrete Slab Infill, Concrete Ramp and Railings (Back Door Landing)	110 SF	$26,627	FAIR	SEVERE	N
Reinforce Existing Floor Structure	56 SF	$5,465	GOOD	LOW	N
Reinforce Existing Roof Structure	921 SF	$30,815	GOOD	LOW	N
MECHANICAL					
HVAC - Increase Ventilation	1,932 SF	$45,787	FAIR	MODERATE	N
Remove and replace propane piping	175 LF	$8,434	GOOD	MODERATE	N
ELECTRICAL					
Replace Lightning Protection System	1,105 SF	$12,324	FAIR	MODERATE	N
Ventilation - Existing PV System Expansion	1,932 SF	$32,320	FAIR	MODERATE	N

$474,127

ASSISTANT KEEPERS QUARTERS & WORKSHOP					
	Quantity	Total Net	CLR/HSR Report Condition	CLR/HSR Report Priority	Change from 2010.12.16 VA?
ARCHITECTURAL					
Hazmat Mitigation: Asbestos, lead containing paint, lead dust, lead in soils, and mold were identified or assumed to be present.	1 LS	$47,422 (No lead soil mitigation)		LOW	Y - refined hazmat $
Roof Removal and Replacement	714 SF	$18,912	POOR	SEVERE	N
Install Rain gutter and Downspouts	54 LF	$6,775	POOR	MODERATE	N
Paint Exterior Siding and Trim	1,134 SF	$7,904	GOOD	LOW	N
Paint Soffit and Trim	415 SF	$4,050	GOOD	LOW	N
Install New Glazing, Repaint Window Frames and Sash	50 SF, 98 SF	$13,678	FAIR	LOW	N
Paint Miscellaneous	1 LS	$2,630			N
STRUCTURAL					
Reinforce Existing Roof Structure	34 SF	$2,844	UNKNOWN	MODERATE	N
MECHANICAL					
Cap Unused Piping	1 LS	$2,630	POOR	LOW	N
HVAC - Increase Ventilation	778 SF	$18,438	POOR	MODERATE	N
ELECTRICAL					
Replace Feeder Circuitry	778 SF	$7,592	POOR	MODERATE	N
Ventilation - PV System	778 SF	$13,015	POOR	MODERATE	N
					$145,890

POWER HOUSE					
	Quantity	Total Net	CLR/HSR Report Condition	CLR/HSR Report Priority	Change from 2010.12.16 VA?
ARCHITECTURAL					
Hazmat Mitigation: Asbestos, lead containing paint, lead dust, lead in soils, and mold were identified or assumed to be present.	1 LS	$34,248 (No lead soil mitigation)		LOW	Y - refined hazmat $
Roof Removal and Replacement	779 SF	$20,634	POOR	SEVERE	N
Install Rain gutter and Downspouts	88 LF	$11,041	N/A - None existing.	SEVERE	N
Repair Exterior Brick	175 SF	$9,759	GOOD	LOW	N
Paint Soffit and Trim	56 SF	$546	N/A	LOW	N
Repair Stairs	1 LS	$2,630	GOOD	LOW	N
Install New Glazing, Repaint Window Frames and Sash	40 SF, 40 SF	$8,588	FAIR	LOW	N
Paint Miscellaneous	1 LS	$2,630			N
STRUCTURAL					
Repair Existing Roof Structure	110 SF	$9,201	GOOD	LOW	N
MECHANICAL					
Replace Tram Hoist	1 EA	$21,000	POOR	SEVERE	Randy Ross to verify; $16,200 is base cost (not installed)
HVAC - Increase Ventilation	832 SF	$19,718	FAIR to POOR	MODERATE	N
ELECTRICAL					
Replace Branch Circuitry	832 SF	$11,599	POOR	LOW	N
Ventilation - Existing PV System Expansion	832 SF	$13,919	GOOD	MODERATE	N
Overcurrent Protection	1 LS	$3,156	GOOD	MODERATE	N
					$168,669

SHED -- Exterior Stabilization Only					
	Quantity	Total Net	CLR/HSR Report Condition	CLR/HSR Report Priority	Change from 2010.12.16 VA?
ARCHITECTURAL					
Hazmat Mitigation: Asbestos, lead containing paint, lead dust, lead in soils, and mold were identified or assumed to be present.	1 LS	$18,442		LOW	Y- revised hazmat $, based on information/discussion w hazmat consultant, after VA
Roof Removal and Replacement	444 SF	$18,570	POOR	SEVERE	N
Install New Glazing, Repaint Window Frames and Sash	25 SF, 25 SF	$5,367	POOR	MODERATE	N
					$42,379

Total for Michigan Island Pref Alt.:	$2,342,396

OUTER ISLAND

OUTER ISLAND TOWER					
	Quantity	Total Net	CLR/HSR Report Condition	CLR/HSR Report Priority	Change from 2010.12.16 VA?
ARCHITECTURAL					
Hazmat Mitigation: Asbestos, lead containing paint, lead dust, lead in soils, and mold were identified or assumed to be present.	1 LS	$20,000 (assoc. paint)		MODERATE and LOW	N
Exterior Wall - Repoint/Seal Masonry	3,192 SF	$64,549	FAIR to POOR	MODERATE	N
Install Handrails	17 LF	$4,420	POOR	MODERATE	N
Patch Roof Rust	65 SF	$751	FAIR	MODERATE	N
Paint, Roof and Trim	65 SF	$2,253	FAIR to POOR	MODERATE	N
Paint, Exterior Siding and Trim	3,192 SF	$23,053	FAIR to POOR	MODERATE	N
Install New Glazing; Reinstall Glazing in Windows; Repaint Frames and Sash	3 SF; 150 SF	$10,506	GOOD	LOW	N
Paint Miscellaneous	1 LS	$1,363			N
STRUCTURAL					
Monitor Existing Cracks	1 LS	$5,451	GOOD	LOW	N
MECHANICAL					
HVAC - Increase Ventilation - Passive	95 SF	$2,744	FAIR and POOR	MODERATE	N
ELECTRICAL					
Inspect/Replace Lightning Protection System	95 SF	$2,196	FAIR to POOR	MODERATE	N

$137,286

KEEPERS QUARTERS					
	Quantity	Total Net	CLR/HSR Report Condition	CLR/HSR Report Priority	Change from 2010.12.16 VA?
ARCHITECTURAL					
Hazmat Mitigation: Asbestos, lead containing paint, lead dust, lead in soils, and mold were identified or assumed to be present.	1 LS	$30,000 (assoc. paint)		MODERATE and LOW	Y - reduced, based on discussion w hazmat consultant, after VA
Exterior Wall - Repoint / Seal Masonry	2,204 SF	$44,569	GOOD	MODERATE	N
Install Handrails	40 LF	$10,400	POOR	LOW	N
Chimney Liner	37 SF	$10,689	FAIR	LOW	N
Windows, Repaint Frames and Sash	216 SF	$13,728	GOOD	MODERATE	N
Wood Flooring, Refinish Existing	1,779 SF	$25,696	GOOD to FAIR	MODERATE	N
Paint, Roof & Trim	243 SF	$2,457	GOOD	MODERATE	N
Paint, Soffit & Trim	339 SF	$3,428	GOOD	LOW	N
Paint, Exterior Siding & Trim	224 SF	$1,618	GOOD	LOW	N
Paint Miscellaneous	1 LS	$5,451			N
MECHANICAL					
HVAC, Increase Ventilation	2,494 SF	$61,241	FAIR	SEVERE (Chimney Liner); MODERATE (Ventilation/Piping)	N
ELECTRICAL					
Replace Lightning Protection System	1,222 SF	$14,121	FAIR to POOR	MODERATE	N
Photovoltaic System (Ventilation)	2,494 SF	$43,229	POOR	MODERATE	N

$266,627

FOG SIGNAL BUILDING					
	Quantity	Total Net	CLR/HSR Report Condition	CLR/HSR Report Priority	Change from 2010.12.16 VA?
ARCHITECTURAL					
Hazmat Mitigation: Asbestos, lead containing paint, lead dust, lead in soils, and mold were identified or assumed to be present.	1 LS	$20,000		MODERATE and LOW	N
Install Handrails	20 LF	$5,200	POOR	LOW	N
Roofing, Repair Existing	1,290 LF	$11,180	GOOD	LOW	N
Windows, Paint Frame & Sash	96 SF	$6,101	FAIR	MODERATE	N
Paint, Soffit & Trim	333 SF	$3,367	FAIR	LOW	N
Paint Stairs	1 FLT	$2,889	GOOD to FAIR	LOW	N
Paint Miscellaneous	1 LS	$2,725			N
STRUCTURAL					
Reinforce Existing Roof Structure	210 SF	$7,280	GOOD	LOW	N
MECHANICAL					
Tram Hoist, Replace	1 EA	$21,000	POOR	SEVERE	Randy Ross to verify; $16,200 is base cost (not installed)
					$79,742

OIL STORAGE					
	Quantity	Total Net	CLR/HSR Report Condition	CLR/HSR Report Priority	Change from 2010.12.16 VA?
ARCHITECTURAL					
Hazmat Mitigation: Asbestos, lead containing paint, lead dust, lead in soils, and mold were identified or assumed to be present.	1 LS	$500		LOW	N
Exterior Wall - Repair & Repoint Brick	261 SF	$7,540	FAIR	LOW	N
					$8,040

PRIVY					
	Quantity	Total Net	CLR/HSR Report Condition	CLR/HSR Report Priority	Change from 2010.12.16 VA?
ARCHITECTURAL					
Hazmat Mitigation: Asbestos, lead containing paint, lead dust, lead in soils, and mold were identified or assumed to be present.	1 LS	$1,000		LOW	N
Exterior Wall - Repair Brick	132 SF	$3,813	FAIR	LOW	N
Roofing, Repair Existing	56 LF	$485	FAIR to POOR	MODERATE	N
Windows, Paint Frame & Sash	3 SF	$381	FAIR	LOW	N
Paint, Exterior Siding & Trim	135 SF	$1,950	FAIR	LOW	N

$7,629

Total for Outer Island Pref. Alt.:	$499,324

DEVILS ISLAND

DEVILS ISLAND LIGHT STATION TOWER					
	Quantity	Total Net	CLR/HSR Report Condition	CLR/HSR Report Priority	Change from 2010.12.16 VA?
ARCHITECTURAL					
Hazmat Mitigation: Asbestos, lead containing paint, lead dust, lead in soils, and mold were identified or assumed to be present.	1 LS	$52,600 (No lead soil mitigation)		MODERATE	refined hazmat $
Install Handrails	42 elf	$10,539	FAIR	MODERATE	N
Windows, New Glazing	150 LF	$23,002	GOOD	MODERATE	N
Windows, Paint Frame & Sash	153 SF	$9,385	GOOD to FAIR	MODERATE	N
Paint, Exterior Trim	1,794 SF	$12,505	GOOD	MODERATE	N
Paint Roof Rust	94 SF	$1,048	FAIR	SEVERE	N
Paint, Roof & Trim	94 SF	$3,145	FAIR	SEVERE	N
Paint Miscellaneous	1 LS	$1,315			N

STRUCTURAL					
Foundation, Repair Cracks	576 SF	$32,120	POOR (visible portion)	UNKNOWN (evaluate further)	N
Additional Investigation, Allowance	1 LS	$26,303			N
MECHANICAL					
HVAC - Increase Ventilation (Passive)	223 SF	$3,109	FAIR	MODERATE	N
ELECTRICAL					
Inspect/Replace Lightning Protection System	223 SF	$2,487	FAIR to POOR	MODERATE	N

$177,558

KEEPERS QUARTERS	Quantity	Total Net	CLR/HSR Report Condition	CLR/HSR Report Priority	Change from 2010.12.16 VA?
ARCHITECTURAL					
Hazmat Mitigation: Asbestos, lead containing paint, lead dust, lead in soils, and mold were identified or assumed to be present.	1 LS	$50,000 (No lead soil mitigation)		MODERATE	N
Remove Floor Decking & Structure	66 SF	$3,312	FAIR	MODERATE	N
Remove Roofing, Shingles	70 SF	$1,171	GOOD to FAIR	LOW	N
Exterior Wall - Repoint Masonry	3,040 SF	$59,332	GOOD	LOW	N
Roof Shingles, Wood	72 SF	$3,212	GOOD to FAIR	LOW	N
Windows, Paint Frame & Sash	190 SF	$11,655	FAIR to POOR	SEVERE	N
Paint, Soffit & Trim	452 SF	$4,411	GOOD	LOW	N
STRUCTURAL					
Wood Floor Decking & Structure	66 SF	$9,201	FAIR	MODERATE	N
MECHANICAL					
HVAC, Increase Ventilations	2,373 SF	$56,239	FAIR	MODERATE	N
ELECTRICAL					
Inspect and Replace Lightning Protection System	921 SF	$10,272	FAIR to POOR	MODERATE	N
Photovoltaic System (Ventilation)	2,373 SF	$39,698	FAIR	MODERATE	N

$248,503

ASSISTANT KEEPERS QUARTERS					
	Quantity	Total Net	CLR/HSR Report Condition	CLR/HSR Report Priority	Change from 2010.12.16 VA?
ARCHITECTURAL					
Hazmat Mitigation: Asbestos, lead containing paint, lead dust, lead in soils, and mold were identified or assumed to be present.	1 LS	$50,000 (No lead soil mitigation)		MODERATE and LOW	Y - reduced, based on discussion w hazmat consultant, after VA
Exterior Wall - Repoint Masonry	86 SF	$3,357	GOOD	MODERATE	N
Windows, Paint Frame & Sash	198 SF	$12,145	GOOD to FAIR	MODERATE	N
Paint, Roof & Trim	1,198 SF	$11,691	GOOD	LOW	N
Paint, Soffit & Trim	341 SF	$3,328	FAIR	LOW	N
STRUCTURAL					
Wood Floor Decking & Structure	81 SF	$1,292	FAIR	SEVERE	N - but this number has been reduced to reflect Park's role in the work
Floor Structure, Reinforce Existing	54 SF	$5,270	FAIR	SEVERE	N
MECHANICAL					
HVAC, Increase Ventilation (Passive)	2,153 SF	$30,015	FAIR to POOR	MODERATE	N
ELECTRICAL					
Inspect and Replace Lightning Protection System	262 SF	$24,012	FAIR to POOR	MODERATE	N
					$141,110

FOG SIGNAL BUILDING					
	Quantity	Total Net	CLR/HSR Report Condition	CLR/HSR Report Priority	Change from 2010.12.16 VA?
ARCHITECTURAL					
Hazmat Mitigation: Asbestos, lead containing paint, lead dust, lead in soils, and mold were identified or assumed to be present.	1 LS	$20,000 (No lead soil mitigation)		MODERATE	Y - reduced, based on discussion w hazmat consultant, after VA
Exterior Wall - Repoint Masonry	126 SF	$4,918	GOOD	LOW	N
Exterior Wall - Repair Existing	200 SF	$5,576	GOOD (shingles); POOR (foundation brick)	LOW	N
Roofing, Repair Existing	1,222 SF	$10,221	GOOD to FAIR	LOW	N
Windows, Paint Frame & Sash	108 SF	$6,625	FAIR to POOR	MODERATE	N
Paint, Roof & Trim	1,222 SF	$10,221	GOOD	LOW	N

$57,561

BOATHOUSE					
	Quantity	Total Net	CLR/HSR Report Condition	CLR/HSR Report Priority	Change from 2010.12.16 VA?
ARCHITECTURAL					
Hazmat Mitigation: Asbestos, lead containing paint, lead dust, lead in soils, and mold were identified or assumed to be present.	1 LS	$5,000 (No lead soil mitigation)			N
Exterior Wall - Repair Existing	1,070 SF	$14,917	GOOD to FAIR	LOW	N

$19,917

Total for Devils Island Pref. Alt.:	$644,649

LONG ISLAND

TRIPLEX	Quantity	Total Net	CLR/HSR Report Condition	CLR/HSR Report Priority	Change from 2010.12.16 VA?	
ARCHITECTURAL						
Rehabilitation per Park Decision		$92,295			Y - per Park discussions	
Reroof		$57,705				
						$150,000

Total for Long Island Pref. Alt.:	$150,000

SAND ISLAND

SAND ISLAND SITE					
	Quantity	Total Net	CLR/HSR Report Condition	CLR/HSR Report Priority	Change from 2010.12.16 VA?
SITE/CULTURAL LANDSCAPE					
Site Clearing	1 ACRE	$8,680	POOR	SEVERE	N
Site Circulation/ Accessibility	1 LS	$20,592 (Accessible boardwalk not included)	FAIR	MODERATE	N
					$29,272

SAND ISLAND LIGHT STATION QUARTERS					
	Quantity	Total Net	CLR/HSR Report Condition	CLR/HSR Report Priority	Change from 2010.12.16 VA?
ARCHITECTURAL					
Hazmat Mitigation: Asbestos, lead containing paint, lead dust, lead in soils, and mold were identified or assumed to be present.	1 LS	$100,000 (No lead soil mitigation)		MODERATE	
Repair or Remove Finishes	2,132 SF	$14,861	GOOD to FAIR to POOR	MODERATE	
Wood Ramp, ADA	16 SF	$5,576	POOR	MODERATE	
Install Handrails	42 L F	$10,539	GOOD to FAIR	SEVERE	
Millwork, Refinish Existing	15 LF	$6,273	GOOD to FAIR to POOR	LOW	
Windows, Paint Frame & Sash	314 SF	$13,132	GOOD to FAIR	MODERATE	
Door, Refinish & Replace Hardware - Existing	17 LEAF	$33,179	GOOD	MODERATE	

Rain gutter & Downspouts	156 LF	$19,573	POOR	SEVERE	
Wood Flooring, Refinish Existing	1,384 SF	$19,294	GOOD to FAIR to POOR	LOW	
Flooring, Repair Existing	192 SF	$1,606	GOOD to FAIR to POOR	LOW	
Paint & Repair Plaster, Interior Wall & Ceiling	3,078 SF	$34,328	GOOD to FAIR to POOR	MODERATE	
Paint, Stairs	1 FLT	$2,788	GOOD to FAIR	MODERATE	
Paint Miscellaneous	1 LS	$5,261			
STRUCTURAL					
Floor Sheathing	99 SF	$1,656	GOOD	LOW	
Floor Structure, Reinforce Existing	96 SF	$9,368	GOOD	LOW	
Roof Structure, Reinforce Existing	272 SF	$15,168	UNKNOWN	UNKNOWN (evaluate further)	
MECHANICAL					
Remove Piping	20 LF	$1,115	FAIR to POOR	MODERATE	
Cistern - Clean, Paint & Seal Existing	1 EA	$13,941	FAIR to POOR	MODERATE	
HVAC - Increase Ventilation	2,132 SF	$50,527	GOOD	MODERATE	
ELECTRICAL					
Replace Lightning Protection System	2,132 SF	$23,777	POOR	LOW	
Photovoltaic System (Ventilation)	2,132 SF	$35,666	FAIR	MODERATE	
Overcurrent Protection	1 LS	$6,576	N/A	MODERATE	

$424,204

Total for Sand Island Pref. Alt.:	$453,476

PREFERRED ALTERNATIVE TOTAL:	$4,089,845

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As the nation's principal conservation agency, the Department of the Interior has the responsibility for most of our nationally owned public lands and natural resources. This includes fostering sound use of our land and water resources; protecting our fish, wildlife, and biological diversity; preserving the environmental and cultural values of our national parks and historical places; and providing for the enjoyment of life through outdoor recreation. The department assesses our energy and mineral resources and works to ensure that their development is in the best interests of all our people by encouraging stewardship and citizen participation in their care. The department also has a major responsibility for American Indian reservation communities and for people who live in island territories under U.S. administration.

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